

FLORIDA HEALTH NOTES



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The Fight For Clean Water

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The State Board of Health needs additional resources to keep ahead of the state's expanding population and industrial growth which threatens Florida's natural beauty. (Cover photograph) Whether or not Billy catches a fish depends upon the amount of pollution dumped into these waters by cities and industry.

The

FIGHT

for

CLEAN

WATER



FLORIDA HEALTH NOTES

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The Fight For Clean Water

Water is necessary for all living things. All of the larger, and many of the smaller species of life — animal, plant and man — are dependent upon this mixture of hydrogen, oxygen and some 33 other separate substances for their very existence.

Water is the most massive quantity of liquid material on earth. There are some 336 million cubic miles of it in one form or another. About 98 per cent of this water is in the oceans and seas and most of the rest is locked up in ice on polar caps and glaciers. Man gets along on a small .027 per cent in fresh-water rivers, lakes and ground water. These vital stocks of water are replenished by an even tinier but highly mobile .000053 per cent which moves around in the atmosphere and falls as rain.¹

From earliest times, man has settled where water and food were plentiful. He learned that plants and animals needed water. The first civilizations grew in the river valleys of the Nile, Tigris, Eu-

phrates, Indus and Ganges and whole tribes moved up and down the rivers looking for new lands and a better life. For centuries there has been enough water to dilute the wastes that man has dumped into the waters of the earth. There was a time when waters were polluted only by the falling leaves of the trees and the soil that it picked up in its movement. In a continuing cycle, trees, plants and grasses protected the water and soil with their roots.

But with expanding populations and evolving civilizations, man developed many uses for water besides the necessary activities of drinking, cooking, bathing and transportation. He removed the trees and plants which held the soil; he poured raw sewage into the streams; and with industrialization, he added much more dangerous pollutants.

In 1900, a person used an average of five gallons of water per day for his own use. Today, the United States has become a nation of concentrated communities. Even

1. Renn, Charles E. *The Johns Hopkins Magazine*. Vol. 17, No. 8, July 1966, p. 3.

though Florida's cities are bright and sparkling as compared with the grime of Northern communities, the daily bath is a social "must"; clothes, household linens and curtains need frequent washing; and there is an ever-increasing growth of lawn sprinklers, air conditioners, electric dishwashers and backyard swimming pools.

The average Floridian uses 50 gallons of water a day for his own personal use. If domestic and municipal uses are included, the amount averages 150 gallons a day; with the inclusion of agricultural and industrial products, it averages from 1500 to 2000 gallons per person each day.

What are Water's Uses

There are many groups interested in water. Each has its own use of the resources. Everyone wants clean water for human consumption—that is for drinking, cooking and bathing.

Clean water is needed for producing food, watering stock, irrigating fields, and harvesting fish and shellfish.

Clean water is needed for recreation—boating, swimming, camping and sport fishing.

Clean water is needed to support wildlife resources, not only fish and other aquatic life but also animals and birds.

Clean water is needed for industry. Manufacturers of soft drinks, beer and drugs frequently demand water of a very high quality. Such industries as pulp and paper, phosphate processing, agriculture, citrus processing and chemicals require large amounts of water. During the past 25 years, the breakthrough of science and technology has been greater than it was during the entire period from the year 1 to 1940. Progress has demanded additional uses of quality water in larger amounts than man has ever needed before.

Overlapping Interests and Demands

The water resources of Florida belong to the people. However, there are a number of groups who use the state's water resources and each group is intent on gaining its own worthwhile goal.

— Providers of public water supply would like to maintain every stream in a state of pristine purity without turbidity, color, taste or bacteria so that water could be supplied to the public with a minimum of treatment.

— Nature lovers view every lake and river as a national treasure to be guarded against trespassers.

— Those concerned with public waste disposal would like to have access to any available stream for the disposal of wastes with a minimum of treatment.

— Industrial users frequently require purer water for products and industrial processes than is necessary for the usual public water supply.

— Industrial establishments requiring waste disposal would like to use the streams as a natural receiver of liquid wastes with a minimum of treatment.

— Fish and wildlife conservation groups want every waterway as a natural resource primarily for the propagation of fish and wildlife.

— Agricultural interests want to irrigate all dry lands with pure water and drain all wet lands without too much expense.

— Cattlemen object to elimination of waterways or the polluting of water usable for livestock but also insist on their rights to drain pasture lands.

— Electrical power interests value flowing streams as a potential source of power and, in turn, want to put hot water from generating plants back into the streams.

— Shipping interests maintain that the main function of water is for shipping plus the receiving of bilge waters and wastes from ships.²

All of these claims are legitimate and each must be heard and respected. But water is limited and many of the uses are not compatible with another. To give priority to one use inevitably means sacrifices of the other interests. Perhaps restricting use of waters by zoning to compatible uses would be an answer.

What is Water Pollution?

Polluted water is the opposite of clean water. Although Florida's pollution problem may not be as dramatic as that of other areas, such as New Jersey, New York and the District of Columbia, right now is the time to prevent further polluting of our clean waters.

There are many definitions of water pollution. The sanitary engineer has one definition; the lawyer has another; the layman

2. Lee, David B. Unpublished paper given at Twenty-First Annual Meeting of the Soil and Water Conservation Supervisors. Tampa, Florida. August 18, 1966.

may have a third. A pollutant may be anything of a deleterious nature added to water. Water pollution may be anything that has been used for domestic and industrial purposes and channeled into an uncontaminated stream thereby polluting the water and reducing its usefulness. The act of polluting Florida's waterways may be that of adding or emptying into a body of water anything that makes it unsuitable for the purpose for which the water was intended or makes the water uninhabitable for its natural aquatic life.

There are Florida laws which make it unlawful for any rubbish, filth, poisonous or noxious substances likely to affect the health of persons, fish or livestock to be placed in or deposited where it may be washed or otherwise admitted to any of the waters of the state.³

There are a number of pollution classifications listed by various reports and authorities:

Sewage and other oxygen demanding wastes include organic substances from domestic sewage and such industries as food processing plants. These wastes are reduced to stable compounds

3. *Florida Statutes*. Chapter 387.08, p. 1903-1904.

A youngster stirs up oily pollution in a Florida stream. Such pollutants make streams unhealthy.



through the action of aerobic bacteria which require oxygen in their life processes.

Infectious agents are in the wastes from municipalities, sanatoria and certain kinds of industries, such as tanning or meat processing plants, which contain human and animal wastes. These organisms can cause such diseases as typhoid fever, virus infections and intestinal disorders in persons ingesting them directly through drinking untreated water or indirectly through recreational activities.

Plant nutrients are stable mineral compounds which remain after the oxygen-demanding organic wastes are removed by treatment. These nutrients are introduced into streams in large amounts through discharges from municipal sewage and industrial waste plants, or leached from farmlands and citizens' lawns. The nutrients, of which nitrogen and phosphorus are two important examples, are used for food by aquatic plant life, such as algae and water weeds.

Organic chemical exotics, such as detergents, insecticides, pesticides and weed killers, are carried into water bodies with domestic and industrial wastes, washed off vegetables and land surfaces or introduced directly into the waters to control pests or rough fish. Only a limited amount of these chemicals are removed from water, either by sewage treatment plants or water purification plants.

Other mineral and chemical substances result from mining or industrial processes, or from nature itself. They include a wide variety of common salts, metals and metal compounds in solution or as fine particles or acids. Some have very toxic effects.

Sediments, primarily from soils and lands washed by storm and floodwaters, are not normally a primary concern of water pollution agencies. But sediments are important because they reduce shellfish and fish spawning grounds and thus man's food supplies. They reduce aquatic plants which are required in the process of maintaining an adequate dissolved oxygen balance in water and also plug water filters and erode pumping equipment.

Radioactive substances which are possible sources of water pollution are significant because of three important factors: the quan-

tity of material involved, the duration of waste discharge and the degree of hazard associated with the specific radioisotopes involved. Sources of radioactive substances may be waste products from mining or refining of radioactive material or waste products from power reactors for industrial, medical or research purposes which have been allowed to escape.

Heat is a pollutant. Tremendous amounts of water are withdrawn daily from streams and lakes for cooling purposes by steam electric power and other industrial plants. After use, these waters are returned to the river or lake from which they were drawn. Large amounts of heat are transferred to the waters, and since the oxygen which the water holds in solution diminishes with increasing temperature, the adding of heat cuts down the ability of the waters to assimilate oxygen-demanding pollution or support fish life.⁴

What Causes Water Pollution?

It is inevitable that the quality of water is altered with its use. The control of pollution therefore is a problem of critical importance. The method of control needs to vary with the degree and type of pollution, and there are degrees of pollution.

— Natural pollution occurs when the water picks up impurities from the earth's cover, its soil and minerals. The water is polluted before man uses it.

— Permissible pollution is the planned use of the water resources where effluent discharge is highly treated.

— Allowable limited pollution is the reasonable overloading of streams which reduce the full usefulness of the water resources for a limited zone without danger to other beneficial water users.

— Excessive or gross pollution is the misuse, destruction of the water sources.⁵

Water is essential for most of man's activities and one of its important uses is the carrying away of waste materials of which there are many kinds. Some materials can be handled in limited

4. Kerr Report No. 9. *Water Resource Activities in the United States*. U. S. Government Printing Office, 1960.

5. *Florida's Water Resources*. Report of the Florida Water Resource Study Commission to the Gover and 1957 Legislature. Gainesville, Florida, 1956. p. 62.

The Importance of Florida's Waters

"Among Florida's major assets or natural resources are its sunshine, its climate, its water supplies, its streams, its lakes and its shores. Florida sunshine is said to have a value of two billion dollars a year as a tourist attraction. But even Death Valley has an abundance of sunshine. So does the Sahara Desert. Neither are sought as places to live, however, and it becomes immediately apparent that the greatest of all Florida natural resources are its water supplies, including its streams and its beaches. Without them, our sunshine and climate would be of little value."

— Smith, David B., *STREAMS IN FLORIDA*, Florida Engineering Series No. 1, College of Engineering, University of Florida, Gainesville, 1954. From the Preface by John E. Kiker, Jr.

amounts without damage to water resources. Some other types of wastes can be treated satisfactorily before allowing them to enter water resources without danger to the streams. Some inorganic wastes of industry cannot be handled the same way as organic wastes because they interfere with the treatment process and therefore must be handled separately. Other wastes are toxic or otherwise harmful. If wastes are dumped into water courses or permitted to find their way into underground aquifers, they can render water unsuitable for further use.

The natural activity of water provides some purification of organic wastes because of its ability to assimilate waste. Inorganic wastes are generally accumulative and are not quickly dissipated. Unless safeguards against such wastes are installed, both man-made and natural pollution tends to increase. The value of water resources is limited by quality as well as quantity and heavily polluted waters should never be used if other waters are available.⁶

The main detrimental characteristics associated with the discharge of untreated or inadequately treated sewage into surface and underground waters are unhealthy concentrations of disease bacteria, depletion of dissolved oxygen, unsightly floating solids

6. *Ibid.* p. 62.

and turbidity, odors and stimulation of aquatic plant growth. The most important use which might be limited by sewage pollution is the use of water resources as public water supplies.

Wastes from industries are as varied and complex as the industries themselves. Such wastes may contain organic matter similar to that found in sewage, or the wastes may contain other materials, such as oils, acids, greases, chemicals and mineral salts. Florida has a number of industries which have liquid wastes. These are citrus processing, vegetable canning, meat processing, brewery, milk products, crude sugar, mining, phosphate, chemicals, synthetic fibers, acid and fertilizer, pulp and paper, pine tar extraction, metal processing, tannery, oil and asphalt, fish oil, laundry and weaving.

In the past, industrial wastes have been partly responsible for the low oxygen content of tidal waters, streams and portions of lakes and bays. Wastes no longer pollute many of these waters because of the development of useful by-products and in-plant process changes which have been most lucrative to some industries. Waste treatment to permit the reuse of wash water in the phosphate processing field, and treatment of citrus pulp to reduce pollution potential and make fertilizer and animal food have done much to eliminate previously important waste problems.⁷

Authorization of the State Board of Health and County Health Departments

Why is the State Board of Health interested in maintaining clean water and controlling water pollution? Under Chapter 381 of **Florida Statutes**, it is authorized to "commence and maintain all proper and necessary actions and proceedings to enjoin and abate nuisances dangerous to the health of persons, fish and livestock . . ."⁸ and "... to protect and preserve the public health."⁹

Chapter 154.01 of **Florida Statutes** gives counties and cities the authorization to "... cooperate with the state board of health

7. Ibid. pp.64-66

8. *Florida Statutes*. Chapter 381.031(4) (b), p.1880

9. *Florida Statutes*. Chapter 381.031(4) (d), p.1880.



Some exotic pollutants, such as detergents, are not affected by processing in a sewage treatment plant. The State Board of Health is trying to halt the practice of allowing such effluents to flow into drainage ditches and streams.

in the establishment and maintenance of fulltime local health units in such counties for the control and eradication of preventable diseases, and inculcate modern scientific methods of hygiene, sanitation and the prevention of communicable diseases."¹⁰

The State Board of Health has been given the job of supervising the control of water pollution in Chapter 387 which states:

"Any person, firm, company, corporation or association in this state, or the managing agent of any person, firm, company, corporation or association in this state, or any duly elected, appointed or lawfully created state officer of this state, or any duly elected, appointed or lawfully created officer of any county, city, town, municipality or municipal government in this state, who shall deposit, or who shall permit or allow any person or persons in their employ or under their control, management or direction to deposit in any of the waters of the

10. *Florida Statutes*. Chapter 154.01, p. 586.

lakes, rivers, streams and ditches in this state, any rubbish, filth or poisonous or deleterious substance or substances, liable to affect the health of persons, fish or livestock, or place or deposit any such deleterious substance or substances in any place where the same may be washed or infiltrated into any of the waters herein named, shall be deemed guilty of a misdemeanor and upon conviction thereof in any court of competent jurisdiction, shall be fined in a sum not more than five hundred dollars; provided that the carrying into effect of the provisions of this section shall be under the supervision of the state board of health."¹¹

The State Legislatures of the past have declared that water pollution is a health hazard and have given the State Board of Health the authority to make broad policies concerning the control of water pollution as it affects public health. Other state agencies, such as the Game and Fresh Water Fish Commission, the State Board of Conservation, State Soil Conservation Board, State Department of Agriculture and many local governments have interests in water control districts, waterway beautification projects, water management programs, shellfish harvesting and other programs which also enter into the water pollution control picture.

This issue of **Florida Health Notes** will tell you what the State Board of Health and County Health Departments are doing to protect the clean waters of Florida. While they have been given the authority to supervise the control of water pollution, they frequently have not had adequate resources to carry out their programs. Much progress has been made in the past 20 years, but there is much to be done. This issue of **Health Notes** also will tell you what steps the State Board of Health is taking to enlarge its program.

The Water Picture in Florida

Florida is a state of 58,560 square miles and contains some 30,000 lakes. Because of its peninsular shape, no part of the state is farther than 70 miles from the Atlantic Ocean or Gulf of Mexi-

11. *Florida Statutes*. Chapter 387.08, pp. 1903-1904.

co. It has more shoreline than any other state, some 1200 miles of general coastline and nearly 9000 miles of tidal shoreline.

About 24 per cent of the water received as rain moves to the ocean via surface channels, and as it travels it forms 12 large river basins and many small ones. Surface waters average 40 billion gallons flow each day with the larger important rivers, Apalachicola, Choctawhatchee, Escambia, Suwannee and St. Johns, contributing some 88 per cent of the state's surface flow. In the south, Lake Okeechobee, which at its normal stage covers 700 square miles, is a main focal point of the South Florida Flood Control District. The Peace River, which flows through the citrus and phosphate belts, is important because of its use as a public water supply for some cities and the depository of sewage plants' effluent for other cities.

The course of a stream, the rapidity of flow, characteristics, fitness for use and other factors determine the value of a stream as a natural resource. Unlike many other states, which may have to ration water in the near future because of increasing population, industrial expansion and demands for recreational facilities, Florida has an extraordinarily large supply of water and an equally large and varied demand for water because of the state's year around warm climate.

But according to Florida's Water Resources:

"There are some areas in Florida where gross pollution exists, but in no case does gross pollution extend more than a few miles, and a few cases can be cited where pollution is restricting the total use of a stream for a beneficial purpose. It can almost be said that Florida has no water so seriously polluted that it cannot be recovered. These statements must be qualified, however for there are cases where the uses are partially restricted, and there are indications that these pollution conditions will become more serious unless corrective or preventive action is taken."¹²

The problem of water pollution is complicated by the fact that Florida has a large tourist industry which is dependent upon the state's natural climate and resources. Approximately 16 million tourists visit the state each year and spend some \$3 billion. These

12. *Op. Cit. Florida Water Resources*, p. 62.

visitors expect to find good fishing of all kinds, boating and bathing facilities, picturesque lakes, streams and springs and clean waters. The outdoor recreational facilities are perhaps the greatest incentive that tourists have for coming to Florida each year.

The State Board of Health's Concern About Water Quality and Pollution

The State Board of Health has been interested and concerned about water quality in Florida for many years. The public water supply, production of seafood and shellfish and cleanliness of public bathing places are prime examples of areas in which the State Board of Health has jurisdiction.

The growth of cities and their increasing amount of wastes, the rise in the number of small motorboats and their sewage discharge, and the expansion of harbors with their many commercial and Naval ships and fishing boats have endangered the quality of water.

Streams and lakes are usually in balance in nature. Fish and other aquatic animals take in oxygen and give off carbon dioxide which is absorbed by plants that in turn give off oxygen. When pollution enters the waterway, the balance is upset.

The amount of pollution that a stream can absorb is limited by the amount of oxygen available in the water. Oxygen is required for certain bacteria to live and these organisms digest and render harmless sewage and other organic matter. Inorganics, such as mineral salts and synthetic materials, are not affected by natural purification processes. When too much waste is poured into the stream, the oxygen is exhausted, all forms of life die, except the non-oxygen-demanding bacteria, anaerobic, and the stream becomes septic.

DOMESTIC SEWAGE

Florida's Expansion in Past 20 Years

At the same time that Florida is greatly dependent upon its tourist trade for a large part of its economy, it is also becoming greatly urbanized and industrialized. The population has increased



Florida has built some 1550 sewage treatment plants, such as this one, in the fight for clean water. Much of the impetus has been provided by the State Board of Health.



over 1.7 million in the past 10 years and nearly four million in the past two decades. Over 70 per cent of the people live in 11 counties—Dade, Duval, Hillsborough, Pinellas, Broward, Brevard, Volusia, Orange, Escambia, Polk and Palm Beach. Great concentrations of people usually lead to domestic and industrial pollution.

Florida has been called the "septic tank state" in the past, simply because this method of domestic waste disposal has been widely used. While the population has increased to nearly six million and 70 per cent of the population is urbanized, only 50 per cent of the people are provided with sewers and adequate sewage treatment.

Yet in spite of this, Florida is one of the leading states in modern sewage treatment plant construction. In 1930, when the population was 1.1 million, there were 20 sewage treatment plants in the state. By the end of 1965, there were 1539 sewage treatment plants in operation.

In 1946, the homes of eight per cent of the state's population were connected to some kind of sewerage system. That year the State Board of Health received and approved 34 sewerage projects which cost an estimated \$11 million.¹³ By 1956, 43.8 per cent of the population was on sewers; 272 plants were in operation and the State Board of Health received and approved plans for 259 sewage treatment plants estimated at \$30.2 million.¹⁴ During 1965, plans for 822 projects costing an estimated \$38.2 million were received and approved by the State Board of Health¹⁵.

During the past 20 years, Florida has spent \$626 million on sewerage systems. A total of \$473 million of this sum was spent in the last decade. During this period, 1439 sewage treatment plants were constructed serving over 648,000 persons, or approximately 37 per cent of the 10-year population growth of 1.7 million. It is sad but true that during this time, 5008 privies and 317,436 septic tanks were also installed, serving 1.1 million persons.¹⁶

13. *Annual Report*. Florida State Board of Health, 1946, p. 61.

14. *Annual Report*. Florida State Board of Health, 1956, p. 141.

15. *Annual Report*. Florida State Board of Health, 1965, p. 225.

16. *The Sewerage Problem*. Unpublished paper by Division of Waste Water and Division of Special Services, Bureau of Sanitary Engineering, Florida State Board of Health. Presented at Urban Planning for Environmental Health Course. Sarasota, Florida, June 20, 1966.

During the past two decades, many major bodies of water were cleaned up through the untiring efforts of local interests and the State Board of Health. Among these were Biscayne Bay in Dade County and Lake Worth in Palm Beach County. Also, portions of Tampa Bay in Hillsborough County, Sarasota Bay in Manatee County and Bayou Chico in Escambia County have been cleaned up through the construction of sewage or industrial waste treatment plants.

In 1941, when the population of Miami was 172,172 persons, the principal place for the disposal of domestic wastes for the city was Biscayne Bay which received approximately 26 million gallons of raw sewage a day. The State Board of Health made a study that year and recommended the construction of one of two types of sewage treatment plants.

At that time, there were "many sources of sewage other than the Miami River. Of a total of 70 outfalls, 29 emptied into the Miami River, 10 between Rickenbacker and Venetian Causeways, 24 between Venetian Causeway and Bay Point along the Miami shoreline and seven outside the study area."¹⁷

In 1949, another study was made and the director of the Bureau of Sanitary Engineering of the State Board of Health, recommended and urged the City Commissioners to proceed with the designing, constructing and operating of an adequate collection system and sewage treatment plant to alleviate the public health hazards existing in Biscayne Bay.¹⁸

In 1957, Miami started construction of a sewage treatment plant on Virginia Key which had a design capacity of 47 million gallons per day. This plant resulted in the diversion of 30 to 50 million gallons of raw sewage each day and made most of Biscayne Bay

17. McNulty, J. Kneeland, Reynolds Ernest S. and Miller, Sigmund M. "Ecological Effects of Sewage Pollution in Biscayne Bay, Florida: Distribution of Coliform Bacteria, Chemical Nutrients and Volume of Zooplankton." *Biological Publication in Water Pollution, Transactions of the 1959 Seminar*. U. S. Department of Health, Education, and Welfare, Public Health Service, Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio, p. 201.

18. Letter of transmittal, *Biscayne Bay Pollution Survey, May through October 1949*, Bureau of Sanitary Engineering, Florida State Board of Health.

suitable for limited recreational activities, such as boating and water skiing.

Lake Worth has also become a recreational area with the installation of sewage treatment plants in the communities along the shores. Palm Beach has a sewage collection system with an ocean outfall; West Palm Beach has installed a complete treatment facility with final chlorinated effluent being discharged into the lake; Riviera Beach, Lake Park, the Village of North Palm Beach, the community of Lake Worth and Boynton Beach have installed sewers and treatment plants; Lantana is connected to the Lake Worth sewerage facility. Prior to this time, many of these communities were dumping untreated sewage directly into the lake.

A 1962 survey conducted by the State Board of Health found that the sewer outfall to Lake Worth was limited to: highly treated effluent from the West Palm Beach sewage treatment plant, emergency overflow drains from various lift stations along the shore of the lake, a number of storm sewers, and industrial waste from one milk pasteurization plant.¹⁹

While much progress has been made in the past 20 years, Florida communities are continuing to build sewage collection and treatment systems. The State Board of Health encourages such construction by offering professional guidance and advice on a regional and county level and approval of plans on the state level.

During 1965 construction or renovation of sewage treatment systems was underway at Dania, North Miami, Auburndale, Eau Gallie, Winter Haven, Bradenton, Fort Walton Beach and Tallahassee; construction was completed in such municipalities and/or sanitary districts as Fort Lauderdale, South Palm Beach, Cape Canaveral, Long Key Sanitary District, Blountstown, Holly Hill, Lake Butler, Pahokee, Daytona Beach, Starke, St. Petersburg and Dunnellon; plans were approved for Coral Gables, South Miami, Opa Locka, Holmes Beach, St. Petersburg's main plant, Deerfield Beach, Leesburg, Pensacola, Niceville, Marianna, Umatilla, Naples and Winter Park.

19. *Progress Report, Lake Worth Survey, July-August 1962.* Bureau of Sanitary Engineering, Florida State Board of Health.

Domestic Effluent Discharge

With the construction of so many sewage treatment plants, there must be some place to empty the treated effluent. All counties do not have access to salt water and thus the effluent must be discharged into nearby freshwater streams. Waterways and lakes must continue to function as the final place of disposal for

Water Sampling and Testing Doubles

The work of testing water samples has more than doubled during the past decade. Over 354,000 water samples were analyzed in 1965 by the State Board of Health's Bureau of Laboratories and the engineering laboratory of the Bureau of Sanitary Engineering as compared with 152,000 examinations performed in 1955. These analyses do not include the thousands of bacteriological water analyses made each year by environmental health personnel in 11 of the County Health Departments.

effluent, simply because there is nowhere else to put it. However, the wastes must be engineered out of streams to the maximum extent so that the waters can be used over and over again for all purposes which water must serve.

Jacksonville and a few smaller cities discharge some 16.8 million gallons of raw sewage each day into a few of Florida's streams. At the same time, other communities are discharging over 450 million gallons per day of treated domestic sewage which has an average biochemical oxygen demand (BOD) reduction of 70 per cent. This 70 per cent compares most favorably with a nationwide average of 45 per cent BOD reduction.

The State Board of Health is looking for treatment devices which will bring the BOD reduction to 100 per cent, but this will take additional funds for research and installing the equipment.

Sewage Treatment is Necessary

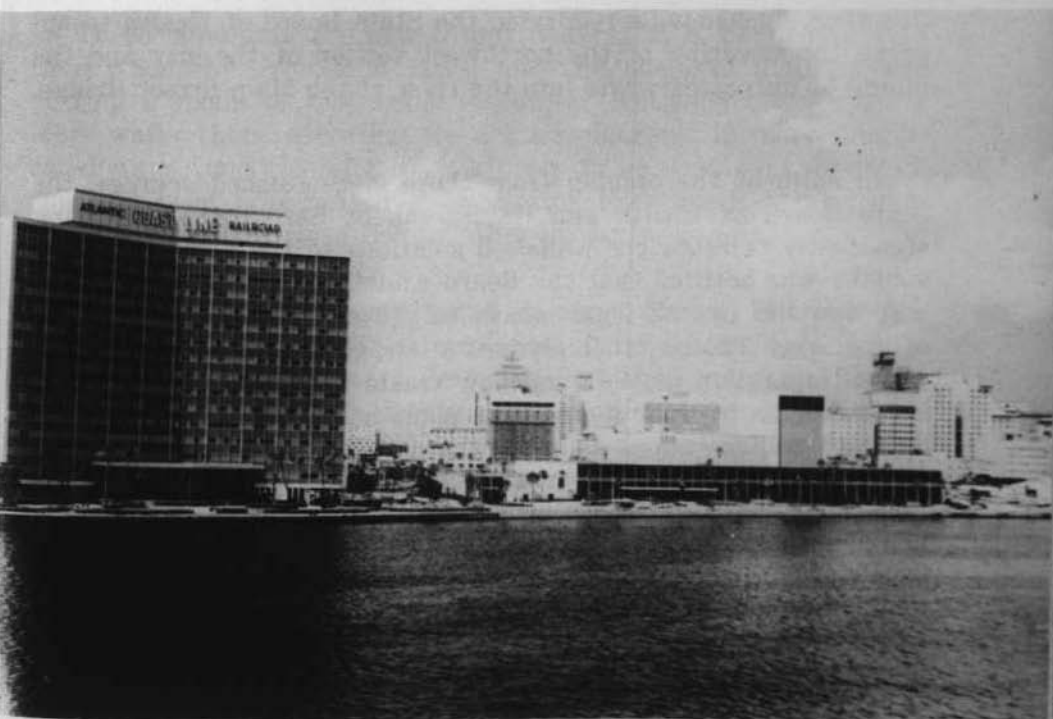
At one time in Florida's history, when there were fewer people, the streams and lakes were adequate to dilute the waste material entering the streams. Today the theory of dilution does not work because the increasing numbers of people and wide va-

riety of pollutants make it impossible for the waters to handle the pollution.

During the past 20 years and through the efforts of the State Board of Health, 1550 sewage treatment plants have been built and the spread of water pollution curbed, despite increasing industrial development and the rapid growth of the population. There are many problem areas. One of the outstanding examples is that of Jacksonville and the St. Johns River. A large percentage of the waters of the state is not polluted and probably less than five to 10 per cent have any gross pollution.

In the late 1940's, the State Board of Health and the U. S. Public Health Service made an extensive study of the St. Johns River and recommended the construction of a sewage treatment

The City of Jacksonville dumps approximately 15 million gallons of raw sewage a day into the St. Johns River. One of the outfalls is located near these buildings on the waterfront. Plans are underway to relieve the situation.



plant for the City of Jacksonville. Since that time, the State Board of Health has tried to influence the city and surrounding suburbs to end the pollution of the St. Johns.

In 1953, Jacksonville retained Dr. Abel Wolman of Johns Hopkins University, a consulting engineer of international reputation in the field of water pollution, who stated that the city did not need waste treatment for many years to come. An advocate of the theory, "The solution of pollution is dilution," Dr. Wolman expressed the opinion that Jacksonville could dispose of its raw sewage in the St. Johns River, because in the river that flowed past its door was the largest volume of moving water in Florida.

In 1955, the consulting engineering firm of Metcalf and Eddy of Boston, Massachusetts, filed a report and recommended a master plan covering Jacksonville-Duval area which stated, "The substantial elimination of the discharge of untreated sewage from the City of Jacksonville into the St. Johns River and its tributaries would not be needed until the fourth stage of the program." About this time, Jacksonville requested the State Board of Health to approve the sewerage of the northwest section of the city and the piping of untreated waste into the river at the Main Street Bridge.

In spite of the opinion from these distinguished sources, the State Board of Health and its Bureau of Sanitary Engineering steadfastly rejected the proposed solutions to the problem. Jacksonville was notified that the Board would not approve such plans and it would use all legal means to prevent further degradation of the river. The city then planned a sewage treatment plant which started operation in 1961 and now treats approximately five million gallons of sewage a day. The plant has a capacity of treating 12 to 13 million gallons daily but the city lacks the sewers to carry the water to the plant for treatment.

Plans are underway by Jacksonville to eliminate raw sewage and some industrial waste from the St. Johns River and its tributaries at an estimated cost of \$25 to \$30 million. This is the first phase of the project. The State Board of Health, meanwhile, has

made more progress in Duval County by bringing about the construction of some 80 large treatment plants.²⁰

INDUSTRIAL WASTE

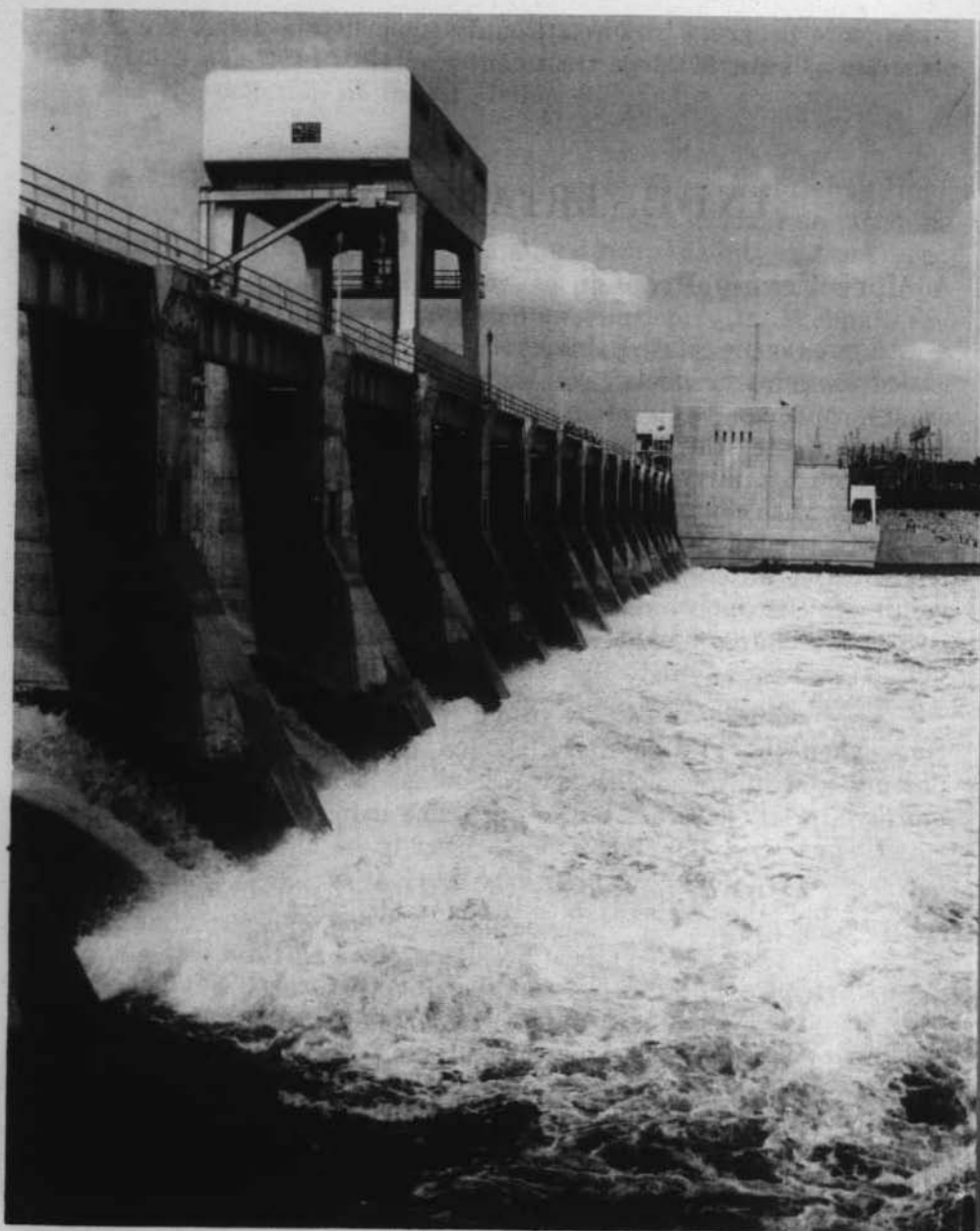
A More Vexing Problem

As previously stated, industrial wastes are as complex and varied as industry itself. Wastes put out by some industries are organic and can be treated along with or in the same way as domestic waste. But industries, such as paper and pulp and chemicals which use large amounts of water, frequently are reflushing the water with contaminated effluent. Many times these pollutants cannot be treated the same way as domestic wastes and consequently the waste waters are let loose into a nearby ditch without treatment. These waters then flow into larger ditches, streams and rivers, contaminating the whole waterway system.

These pollutants are new to our waters. It is happening at a time when the growth of cities and the boom in industry are putting a strain on our water resources. Not only are we using more water than before but we are also using it in more complicated ways; and flushing it back dirty to be used over again by the next user. The next man may drink it or use it to feed livestock, grow crops, raise fish or other products.

Industrial pollutants are found in many forms. Not only are they found in washings from airplanes, citrus processing and milk pasteurization plants and paper mills, but they are found in the more exotic problem-products such as household detergents, farm insecticides and wastes from plastic manufacturing. Radioactive wastes are being carefully watched by such agencies as the Brevard County Health Department and the State Board of Health's Radiological Laboratory. Chemicals, minerals and stable compounds which do not break down are of great significance in water pollution control.

20. Appendix A. Letters between Ray L. Wilson and Wilson T. Sowder, M.D.



Water in a dam is used for electrical, conservation and agricultural purposes.

There is a constant movement by the State Development Commission, the Florida Chamber of Commerce, local chambers of commerce and other groups to bring in industry. Many of the industries which have come into the state in the past 10 years have asked approval of the State Board of Health for their plans for water use and waste treatment facilities prior to building. Sometimes much money is required to install waste treatment facilities and many of the older industries have resisted efforts to educate them to better waste control.

A total of 68 waste treatment plants for industries was approved by the State Board of Health in 1965. Thirty-five of these were coin-operated laundry facilities. Others were for phosphate processing plants, plating mills, abattoirs and meat processing establishments, milk and ice cream plants, printing establishments, car wash installations, citrus processing plants and railroad yards.²¹

While more industry waste treatment plants are being installed every year, the State Board of Health's resources have not kept pace. Every facility needs to be checked from time to time to make certain that it is working properly. It has been impossible to carry out such a program of regular inspection.

Industrial Pollution and Trouble Spots²²

The State Board of Health, while handicapped by a shortage of resources to keep up with Florida's expanding economy, has taken corrective actions in many places of the state. These actions were carried on through conferences, persuasion and conciliation but sometimes legal action was necessary.

Some **Duval County** companies, which had been emptying wastes into the Ribault and Cedar Rivers, installed treatment plants, oil separators and sewers to clean up their operations. Another company was informed that its waste needed additional treatment before entering the St. Johns River, and the City of Jacksonville and a few industries were discharging untreated waste into McCoys Creek. Currently the State Board of Health is seeking in-

21. *Op. Cit. Annual Report, 1965*, p. 207.

22. Appendix B. Report from Vincent D. Patton.

junctions against two companies which have unduly delayed action on waste treatment.

In **Dade County**, a force main was installed which connected the Miami International Airport to the City of Miami sewerage system for the purpose of collecting and transporting wastes from the airport and an industrial area. This main removed wastes which would have gone into the ground near a well field.

In **Putnam County**, a pulp and paper company installed a primary clarifier and is working toward secondary treatment. Another plant has installed new sewers connected to Palatka's sewage treatment plant.

A new plating waste treatment plant has been installed at Cape Kennedy in **Brevard County**. A Naval installation has put in treatment for airplane washing facilities in **Santa Rosa County** and a chemical company has reduced the strength of its wastes through in-plant practices in order to prevent pollution of Escambia Bay.

Two companies in **Escambia County**, which previously were polluting Bayou Chico, have installed treatment plants; another company installed settling basins and a lake to remove solids from its wastes; a fourth company installed two deep disposal wells for strong wastes and is working to reduce contamination of cooling water. A Naval installation is working on a design for treatment of its industrial waste.

The City of Leesburg in **Lake County** has expanded its sewage treatment plant which will treat waste from a citrus concentration operation. Two citrus processing companies in **Orange County** have expanded their treatment facilities and stopped polluting a nearby lake. Prosecution is pending against a third company as a result of its failure to halt pollution.

Many treatment facilities have been installed for small plants, such as laundries and meat packing plants. Several large establishments have installed facilities to treat wastes which would otherwise cause pollution. These are located in Orlando, Bradenton, Hamilton County and West Palm Beach.

Pollution from Agriculture

Agricultural interests are the largest users of water in Florida. A great amount of water used in raising crops, pastures and groves is not collected and transported to the place of use but falls as rain. It would seem that in an area of abundant rainfall, such as Florida, there would be sufficient moisture, but the vagaries of nature do not always supply rainfall as needed and there are periods of normal, wet and drought years. Therefore, irrigation is becoming increasingly important to supply moisture during dry periods.

The extensive use of phosphate and other inorganic fertilizers, and insecticides, herbicides and pesticides used in spraying or dusting crops and nuisance plants are washed into streams in the same manner as silt where land management is not practiced. When fertilizers and phosphates are washed into streams, they supply food for algae, an aquatic plant which through varying degrees of sunlight can make the oxygen content of the waters fluctuate. Extreme changes in oxygen content can kill many forms of aquatic life. At times, residents along the Peace River have objected to "pollution" which was in reality a large bloom of algae.

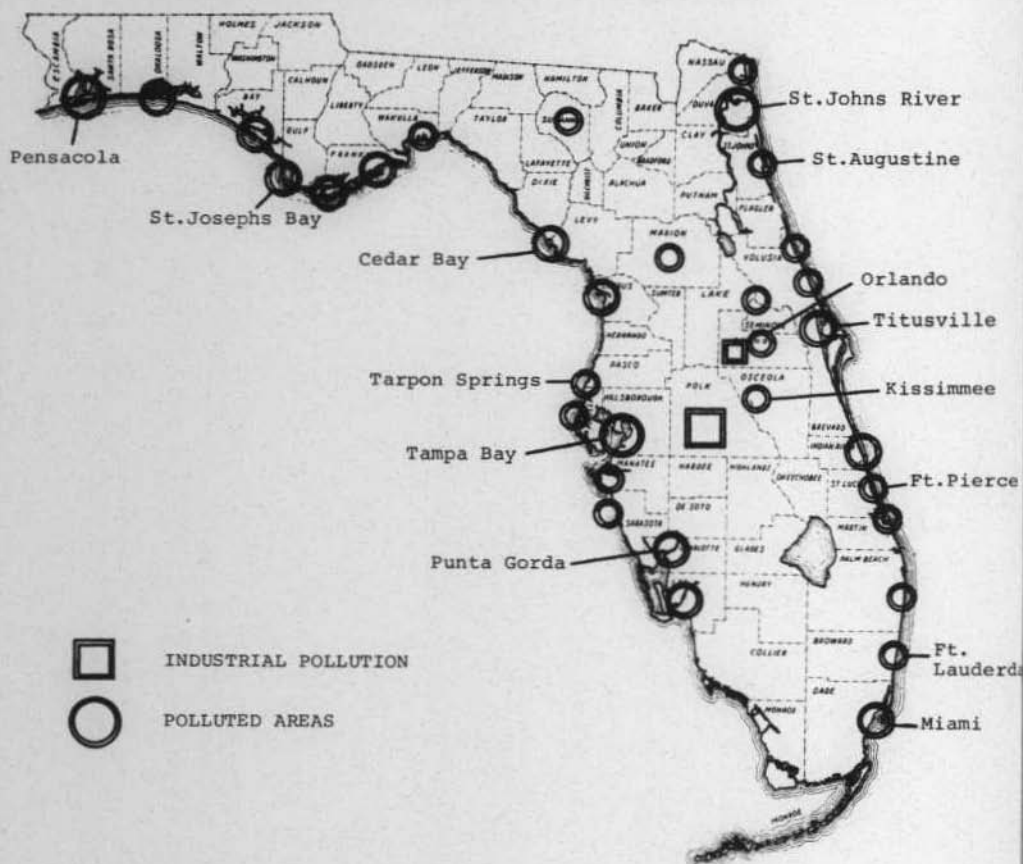
Insecticides, herbicides and pesticides are called exotic pollutants and are hard to dissipate in water, sometimes turning up in public water supplies.

Not only are waters of the state polluted from poor land management, but they are also frequently dirtied by wastes from livestock. One cow gives off as much waste material as 16.4 humans. One hog creates as much pollution as 1.9 humans and seven chickens can equal one adult. Farm animals in the United States produce 10 times as much waste as the human population. One rural ditch in South Florida was discovered by County Health Department sanitarians to have wastes six feet deep from a nearby barn.²³

In one of the largest milk production areas of the state, the County Health Officer of Okeechobee County and his sanitarians did something to circumvent this type of pollution. They worked

23. *Op. Cit.* Lee, David B.

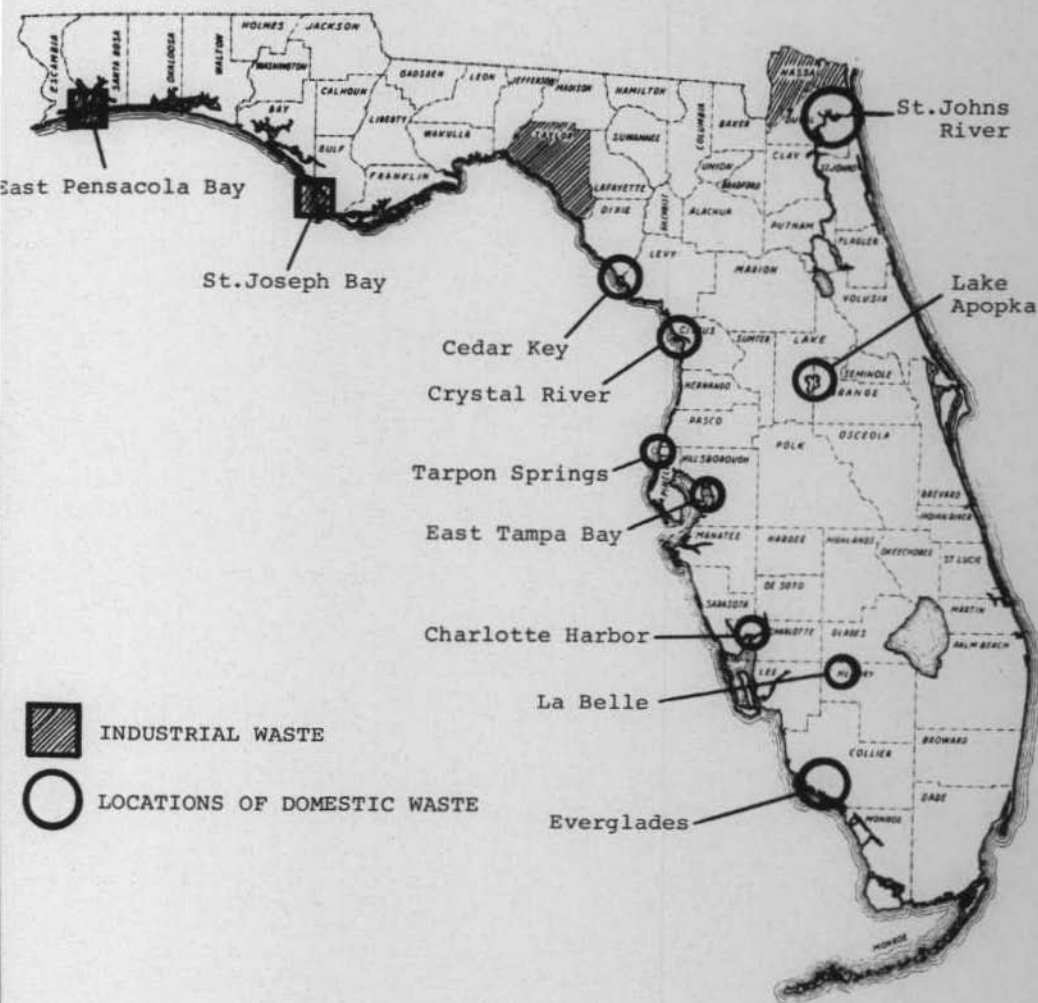
AREAS OF POLLUTION, FLORIDA 1947



Twenty years ago (above), there were few sewage treatment plants and much pollution in Florida. Today, only about five to 10 per cent of the surface waters of Florida have any gross pollution. The waters of Taylor and Nassau Counties (opposite) have been declared by past Legislatures to be industrial rivers.

out with the dairy farmers and industry a method of salvaging barn wastes in a semi-liquid form and placing this material back on the ground to serve as an organic soil builder and plant food nutrient. At one of the state's largest dairy and beef production farms, special type pits were constructed into which all of the

AREAS OF POLLUTION, FLORIDA 1967



barn wastes were accumulated. These semi-liquid wastes were then pumped into a mobile tank and transported to the fields for spraying.

Several benefits were derived from this method of barn waste disposal: These wastes were eliminated as a source of pollution of natural waters; a tremendous amount of organic material and

Lee Received National Water Pollution Control Award

The director of the Florida State Board of Health's Bureau of Sanitary Engineering, David B. Lee, received the Charles Alvin Emerson Award from the Water Pollution Control Federation on September 29, 1966, in Kansas City, Missouri.

The award was made to Mr. Lee for his outstanding service to the Federation and his excellence in the field of public relations and legislation as they relate to water pollution control. In over 34 years of engineering service with the State Board of Health, Mr. Lee has applied his knowledge and administrative ability to water pollution control in Florida and the nation. The award honors the first president of the organization who was a distinguished consulting engineer.

plant nutrients was salvaged; odors were minimized, preventing a sanitary nuisance; fly and other insect breeding places were eliminated; and a large saving in the cost of fertilizers for pastures was realized.

State Institutions and Pollution

While the State of Florida has been telling industries and municipalities to control or eliminate their pollution, it is also necessary for the state to look at its own physical plants to make sure that these institutions are not causing pollution. During a survey of the Apalachicola River in June and July 1964, by regional engineers of the State Board of Health, samples collected indicated a concentration of *E. coli* being discharged from the State Hospital at Chattahoochee.

An investigation was conducted for possible sources of pollution and indications were that the hospital laundry was the contributing factor. To evaluate fully the laundry, a series of samples were collected and field measurements made of the flow from the laundry area and other facilities. It was determined that a combination of flows discharged into the common outfall of the hos-

pital property. This total outfall included the sewage treatment plant discharge and combined laundry and storm sewer lines. Further investigation of the combined lines indicated that the following facilities contributed to the total flow: backwash water from the water plant, excess raw water not used in the water plant, cooling water from the ice plant, blowdown water from the steam plant, and fly ash and dust collection waste water from the steam plant.

Surveys made at sewage treatment plants at other state institutions showed that some of the installations needed:

- * tertiary treatment to obtain a higher degree of treatment,
- * complete engineering study and evaluation of sewerage systems,
- * improved operation and maintenance,
- * laboratory equipment provided in order to make analyses recommended by the State Board of Health for better operation,
- * BOD incubator,
- * connection of sewage treatment plant to city or district sewerage system,
- * routine analyses of plant operations,
- * treatment of laundry wastes,
- * filter renovation,
- * enclosed outfall line laid to a primary canal, and
- * ownership of plant determined and adequate treatment provided for eliminating the discharge of raw sewage.²⁴

Recent federal activities have required the individual states to look at their own programs, improve their facilities and eliminate any unsuitable practices as it is just a matter of time before the Federal Government through the U. S. Department of Interior will be checking these facilities. It would be better for the state to review its own needs, strengths and weaknesses, at all of the state institutions and state-owned sewage treatment facilities than to have the Federal Government point these problems out. Often the weaknesses could be attributed to the practice of slashing allocated budgets for waste treatment facilities prior to construction. Consideration should be given to standardization of new

24. *Report on State Institutions, 1966.* Bureau of Sanitary Engineering, Florida State Board of Health.

treatment works in line with new and modern technology of waste treatment facilities.²⁵

ACTIVITIES OF THE STATE BOARD OF HEALTH AND COUNTY HEALTH DEPARTMENTS

Each year the State Board of Health, its Bureau of Sanitary Engineering and County Health Departments receive many complaints of odors from streams and ditches, fish kills, polluted lakes and streams and other kinds of annoyances. Many people base their complaints on odor, sight or some other sensory perception and not on a scientific basis. Sometimes they have grounds for their complaints and at other times what they think is pollution may be a natural condition. Frequently, the same people expect "instant enforcement" at no cost to the taxpayers.

Every complaint is investigated by the county or regional sanitary engineer or sanitarian. Perhaps the situation is already known, under investigation and checked out. A written report is submitted by the engineers and recommendations made as to how to correct a pollution situation, if one does exist. Steps are made to alleviate the pollution problem by conferences between the State Board of Health engineers and all the polluters.

The County Health Departments are under the supervision and direction of the State Board of Health and there is a close working relationship between the agencies in the field of water pollution control.

Chapter 154.04 of Florida Statutes reads as follows:

"Such employees shall devote their entire time to the control of preventable diseases and the education of the public in modern scientific methods of sanitation, hygiene and the con-

25. Baker, Ralph H., Jr. Letter of Transmittal, *Report on State Institutions*, August 16, 1966. Bureau of Sanitary Engineering, Florida State Board of Health.

trol of communicable diseases in cooperation with and under the supervision of the State Board of Health."²⁶

Among other programs, the State Board of Health and County Health Departments are responsible for the prevention of unsafe shellfish being harvested and reaching the consumer. To carry out this program, sanitary quality of growing water areas are determined by the Bureau of Sanitary Engineering with samples of water and shellfish examined by the State Board of Health laboratories. The sanitary inspection of seafood processing establishments and enforcement of sanitary regulations are the routine function of the County Health Department, with the exception of Franklin County which has inspection by a sanitarian attached to the State Board of Health's marine laboratory.

The U. S. Public Health Service annually evaluates the State Board of Health's program to determine to what extent it meets the standard set up by that federal agency. Shellfish growing areas are reappraised biannually to assess new pollution sources or any significant changes on the various watersheds. The control of water pollution is essential to the thriving shellfish and crustacea industries.

Northeast Florida Region

It is true. Streams that were polluted 20 years ago are polluted today, but stream pollution is not more acute than it was two decades ago. Most of these streams, such as the St. Johns River, will within the next few years improve considerably under the State Board of Health's unrelenting program of surveillance and constant pressure on industries and municipalities.

Twenty years ago there were no adequate sewage treatment plants in the region. Today there are 120 sewage treatment plants serving subdivisions and cities.

There has been less progress in the treating of industrial wastes as compared to providing domestic waste facilities. There are several reasons for this condition: Industries in the past have moved

26. *Florida Statutes*, Chapter 154.04, p. 586.



The State Board of Health investigates every complaint of "fish kill" in the fight to control water pollution. The fish were killed by pollution in Duval County's Cedar Creek on October 13, 1966.



into the region and started production without knowledge of the State Board of Health; other industries have come in and tied into existing sewer lines that discharge untreated wastes into streams; and other industries have come in and provided some treatment devices which were operated for awhile and then bypassed when the facilities were found to be inadequate due to plant expansion or when the cost of operation and expansion of facilities were considered unwarranted by the industry.²⁷

Central Florida Region

Definite progress has been made in the 11 counties of this region in the last 10 to 12 years and particularly in the past five years. At the present only two municipalities in the region are discharging inadequately treated sewage into surface waters. One is Crystal River; however, plans have been approved in this municipality for a secondary treatment facility and financing is the only hurdle to be overcome before construction starts. Cedar Key, the second municipality, is planning toward adequate treatment facilities.

Twenty years ago Imhoff tanks, which gave some sewage treatment, were in operation at Orlando, Ocala, Leesburg and Winter Park. Such a tank is located at Crystal River, but it gives poor treatment. In the past eight years, approximately 30 sewage collection and/or treatment plants were constructed and/or enlarged in the region. Several municipalities, which are presently served by individual septic tanks, have had or are in the process of having engineering reports prepared which could ultimately lead to sewage collection and treatment facilities within the next few years.

The greatest problems are areas outside of municipalities where septic tanks serve large concentrations of populations. Should these areas be annexed by municipalities, where sewage treatment can be provided, or be formed into county sewer districts, the problem would be alleviated. Several hundred small or packaged sewage treatment plants have been installed to serve subdivisions, motels,

27. Appendix C-1. Report from Nick Mastro.

shopping centers, trailer parks, camps and camp grounds and other types of individual installations.

Although progress has been made in industrial waste disposal in the Central Region, many of the citrus processing plants continue to dump their wastes without treatment. Another threat to surface waters, especially where there are swamps adjacent to open water, is the polluting of water resources by muck farm operations.²⁸

Southwest Florida Region

Fifteen years ago there were only three sewage treatment plants in the area, one municipal plant at Sarasota and two at a military hospital. In the past five years, an average of 65.8 sewerage projects each year were constructed at an average yearly cost of over \$2.3 million.

At the present time, two municipalities in the eight-county region are dumping untreated wastes into Florida's streams. They are LaBelle, which is soon to start construction of a sewage treatment plant, and Everglades, which has had plans for a sewage disposal facility but has not begun construction because the City Commission has passed a resolution indicating that it will not build the plant. The State Board of Health has therefore instructed its legal department to initiate appropriate action against Everglades. There have been septic tank failures in Charlotte Harbor and Englewood areas and dumping of raw sewage into the Caloosahatchee River east of Fort Myers.

In the past 15 years, a total of \$28.7 million has been spent on domestic sewage facilities in the Southwest Region and over \$560,000 on industrial waste treatment. There is much progress in the field of industrial waste because there are fewer installations involved. There are no substitutes available for treatment of industrial waste, such as several septic tanks for sewage treatment plants and the promotion of air and water pollution programs by the State Board of Health and the Federal Government.²⁹

28. Appendix C-2. Report from G. W. Folke.

29. Appendix C-3. Report from E. M. Larsen.

Southeast Florida Region

Water pollution in the agricultural counties of South Florida is a problem because the growing dairy industry has difficulty in disposing of barn wastes. Some progress has been made in the field of municipal waste treatment in Martin, St. Lucie, Indian River and Highlands Counties. A number of outfalls discharging into the Indian River have been removed but there is a continuing use of septic tanks. The problems from citrus processing waste could increase as groves go into production and there is a new problem of sedimentation in the saline estuaries from expanding drainage works.

Package treatment plants have been built in larger installations in the Keys and in many cases effluent from these plants are being reclaimed for irrigation purposes. Tidal flush cesspools are being supplanted by septic tanks with a modified sand filter drainfield. These systems have not been successful because of the bootlegging of local calcite material as sand.

Industrial waste is not a significant problem in the Southeast Florida Region with the exception of laundry wastes. There are still zones of pollution along the shorelines, but the zones need clarification before the sources of pollution can be determined.³⁰

Dade County

In 1950 there were only two or three small sewage treatment plants serving isolated areas of Dade County. Portions of Miami were sewered but the city was discharging wastes into Biscayne Bay and local rivers through 70 sewer outfalls. Through repeated surveys and warnings from the State Board of Health, the voters passed a bond issue which resulted in the removal of the sources of pollution.

Since 1954, there have been 75 sewage treatment plants constructed with sewage collection lines serving the adjoining areas. It is estimated that a permanent population of 564,000 persons is

³⁰. Appendix C-4. Report from Richard Starr.

served by public sewerage systems which represent about 46 per cent of the Dade County population.

The county and several municipalities have applied for federal grants to install sewage collection systems and transmission mains which will help remove pollution from many areas. There are many difficult problems ahead before a unified sanitary sewerage and disposal system can be constructed to serve the Metropolitan Dade County area. The estimated cost of the first phase of the project envisioned to be completed before 1970 has been set at \$100 million.³¹

Broward County

In 1947, the population of Broward County was 69,000 where today it stands at nearly half a million. The main water pollution threat comes from some 85,000 septic tanks in the county, and because of these the coliform count in the county's tidal canals is higher than desired.

The county has moved into a county utility system aimed at consolidating water and sewer facilities in the unincorporated areas. Fort Lauderdale is planning a master sanitary sewer program which will provide sanitary sewers for all of the city residents as soon as engineering and monies are available. The City of Hollywood is planning a 10,000-foot ocean outfall which will accommodate the present 87,000 population and the 18,000 residents of Hallandale. Pompano Beach possesses an ocean outfall which accommodates all of the citizens of the Pompano Beach Greater Reserve Area.

Today, the Broward County Health Department is responsible for the inspection of 40 public water systems and 65 waste water systems.³²

31. Appendix D-1. Report from R. L. Quick.

32. Appendix D-2. Report from G. T. Lohmeyer.

Manatee County

In 1946, the estimated population of Manatee County was 25,000 with one military sewage treatment facility constructed at the airport during World War Two. The capacity of this facility was 15,600 gallons per day. Three municipal sanitary sewer systems were discharging untreated wastes into the Manatee River or Wares Creek.

The first survey was conducted in late 1947 and gross pollution was evident. Since that time, sewage treatment systems were built in Bradenton and Palmetto which have a total design capacity of 4.4 million gallons per day. Out of the other 85 sewage treatment plants in the county, 11 serve subdivisions and the remaining serve commercial establishments, such as trailer parks, shopping centers and restaurants. In addition, there are industrial waste water treatment facilities which serve a milk processing plant and commercial laundries.

A new pollution control program is in operation in the county. Water samples have been collected from Bishop's Harbor to determine the possible effect that discharge from the Borden phosphate complex may have on waters of the area in the future. A routine sampling of Sarasota Bay and monitoring of Ward Lake and the Braden River are maintained as part of the pollution network in the county. Samples of water have been collected and analyzed from wells in the vicinity of the new Borden complex to determine the effect of Borden's gypsum ponds on the underground water supply.³³

Hillsborough County

In 1946, Hillsborough had no approved central sewerage system and no approved waste treatment plants. Today, 296,085 persons are served by municipal or private systems and there are 97 sewage treatment plants. Of the three incorporated municipalities, 85 per

33. Appendix D-3. Reports from Frank L. Cross, Allen Kretschmar and George Dame, M.D.

cent of Tampa is served by sewerage systems; 95 per cent of Temple Terrace; and 80 per cent of Plant City.

Of the 127 schools, which have approximately 100,000 students, only 12 are not on sanitary sewers or have their own approved aerobic sewage treatment plants. Several of the 12 remaining schools on septic tanks will be provided with sewage treatment plants in the near future.

A meat processing plant, which in 1946 was dumping its untreated waste into the Palm River, has been connected to the Tampa sewerage system which alleviates an acute pollution problem. The same company has built a large meat packing plant near Plant City and constructed a waste treatment plant utilizing the latest technological advances.³⁴

Pinellas County

Twenty years ago, the majority of populated areas of Pinellas County was served by municipal and individual septic tanks with some of the cities having sewers only in downtown areas. Since that time 90 per cent of the population of 430,000 has access to sewer systems and public water supplies. The sewage treatment plants and connecting sewers were installed at a cost of \$77 million. A big step in putting 90 per cent of the population on sewers was the formation of seven sanitary districts which serve many small communities and subdivisions.

Industrial waste is not a big problem in Pinellas County since the residents are mostly retired families and tourists and the area does not depend upon industry for its economy. Some light industry is present and the major source of industrial waste is from small plating companies.³⁵

34. Appendix D-4. Report from D. W. Rogers.

35. Appendix D-5. Report from Harold Leadbetter.

Palm Beach County

During the past 20 years significant progress has been made in the extension of municipal sewage treatment and the upgrading of new and existing treatment facilities to tertiary treatment or ocean outfall systems.

Progress has been made in Palm Beach County in the curtailment of subdivisions on septic tank systems and discharging of industrial waste. Reported areas of need are countywide planning, expansion of staff and personnel of the County Health Department to meet the growing needs of the county, legal assistance on a county level and the upgrading of privately owned sewerage facilities.³⁶

Water Pollution is a Health Problem

"The mass of population in great conurbations, coupled with ever advancing ideas about hygiene and cleanliness, has made water supply one of the major features of modern civilization."³⁷

The public health aspects of water pollution relate to man's drinking water; to his contact with water in recreation and work; to the contamination of food sources, particularly shellfish; and to the breeding of specific insect vectors of disease. These problems of water pollution are the concern of public health and governmental officials.³⁸

It was not long ago that water-borne epidemics were commonplace. The scourges of typhoid fever and cholera during the middle and late 1800's in America carried thousands of persons to their death. In parts of the world these diseases, particularly cholera, and also amebiasis, continue rampant today. In the Western Hemisphere, shigellosis, schistosomiasis, leptospirosis, paragonimiasis, dracontiasis and dysentery still continue to take heavy tolls among people using polluted waters for drinking and bathing. Because

36. Appendix D-6. Report from Lawrence D. Lukin.

37. Macan, T. T. and Worthington, E. B. *Life in Lakes and Rivers*. Collins of London, 1959. p. 237.

38. Appendix E. *Health Aspects of Water Pollution Control*.

of modern methods of sewage disposal and their widespread use, these water-borne bacterial and parasitic diseases are rare or absent from Florida and the United States. As long as there is pollution, however, the danger is never completely absent. Water can be a dangerous substance.

The possibility that certain disease-causing viruses may pass from man to man through the water he uses has received increasing attention during recent years. Water polluted with human waste has played a prominent role in several poliomyelitis epidemics. A relationship between certain epidemics of infectious hepatitis and polluted water seems certain. Similarly, specific outbreaks of inclusion conjunctivitis, herpangina, epidemic myocarditis, epidemic pleurodynia, summer diarrhea and other infectious gastroenteritides have been traced to contaminated (polluted) water.

Besides these overt threats to the human health by polluted water, there are also the nuisance factors. Pollution by its nature increases the nutritive elements in water resources. This lends to increased mosquito breeding and larger broods of all species native to the polluted area. This alone would cause increased human discomfort, from such insects as "blind mosquitoes," but also large numbers of mosquitoes are ecologically related to outbreaks of mosquito-borne encephalitis—a real threat to human health and comfort.

Health is not simply the absence of disease or infirmity, but the presence of a sense of well-being. Certainly, polluted water

WATER-BORNE DISEASES

Some of the important diseases which can be contracted from polluted waters are: amebiasis, ascariasis, cholera, clonorchiasis (Asiatic liver fluke), inclusion conjunctivitis, diphyllobothriasis, dracunculiasis, echinococcosis, fasciolopsiasis, Salmonellosis, infectious hepatitis, leptospirosis, paragonimiasis, paratyphoid fever, pleurodynia, poliomyelitis, schistosomiasis, shigellosis and typhoid and virus.

does affect the esthetic value of man, to include his desires and needs for recreation which is a major use of Florida's waters.

STATE BOARD OF HEALTH'S RESOURCE PROBLEMS

Personnel and Finances

The State Board of Health is admirably equipped in many ways to carry out the job of controlling water pollution. It is a highly capable agency—reported to be one of the best five of its kind in the United States.³⁹ However, it is having some paralyzing personnel problems.

At the end of 1965, the Bureau of Sanitary Engineering had 31 sanitary engineers and two sanitarians on its staff. There are consistently a number of engineer vacancies which the State Board of Health has been unable to fill because of low salary schedules. As of October 1966, there were 10 open positions. About 75 per cent of the staff spends all or part of its time on stream pollution control.⁴⁰ The present methods of fire-fighting operation and of processing plans for sewage treatment and industrial waste plants without adequate follow-up are not operating the water pollution programs in the best interest of the citizens of Florida.

The State Board of Health needs personnel and monies to provide continuing surveillance of some 3000 public works facilities such as air, water and industrial waste. The budget requirements for the State Board of Health to carry out its statutory responsibilities would be less than the loss and replacement of the physi-

39. Spivak, Johnathan. *Wall Street Journal* (New York), January 19, 1966.

40. Patton, Vincent D. Unpublished paper presented before the Florida Chapter, American Public Works Association, Sixth Annual Convention, Tampa, Florida, May 5, 1966.

cal facilities should they be operated and maintained in an inadequate manner.

An estimated \$250,000 of the Bureau of Sanitary Engineering annual budget is spent on stream pollution activities, with an additional \$120,000 per year being supplemented from federal water pollution control sources.

The Lack of Engineers

The State Board of Health is competing on a nationwide market for sanitary engineers. Recruiters from industry and many areas of government come to Florida and entice our graduates to other states with higher salaries and greater benefits. It is a case of national demand versus national supply and the State Board of Health's personnel files document the recruiting results with such comments:

"I appreciate the consideration . . . however, I have accepted a position elsewhere." D. R. H., applicant from University of Michigan.

"I fully intended to enter public health work of one sort or another . . . but quite frankly, I received an offer from industry that was too good to resist." R. W. G., applicant from Washington University.

"After considering your offer, I have decided not to accept . . ." R. L. D., applicant from West Virginia University.⁴¹

Budget Requests

The rapidly increasing population, which will soon exceed six million, and the accompanying industrial growth, requires bold

41. Austin, Mark. Unpublished paper, "The Scare Engineers." Florida State Board of Health. 1966.



State Board of Health's sanitary engineers check the amount of pollution in a roadside ditch.

action by the State Board of Health and the State Legislature to effectively correct today's pollution problems and to prevent future threats to the state's treasured environmental assets.

To meet the needs of the State Board of Health in this field, it is asking the State Legislature for approximately \$5 million for the 1967-69 biennium. About \$1.5 million of this amount would be used for anti-pollution programs by County Health Departments. This grant-in-aid program is new and should be a highly effective method for the state to both stimulate local concern for air and water pollution and share in meeting the local financial burdens of operating good control programs on a local level. An additional

\$1.5 million in local matching funds would give the program a total sum of \$6.5 million.

The State Board of Health is asking for two new attorneys to handle the increasing needs for enforcing the anti-pollution laws. In addition, 45 new positions have been requested for sanitary engineers, chemists, laboratory technicians, biologists, sanitarians and other personnel to bring an end to the pollution the state has now and prevent future pollution.

Legal Aspects of Water Pollution

Many people who complain about pollution say, "Let's pass a law . . ." and expect that this will end the pollution problems.

Florida now has adequate laws to control pollution and only minor changes are needed to make these laws most satisfactory. The State Board of Health needs a more strongly implemented water pollution control program to control and protect all legitimate users of water resources. Equitable use of water resources should be determined by professional engineers so that tourism, agriculture, industry and conservation interests may use the total environmental resources of the state.

The State Board of Health lacks the legal staff to adequately enforce the laws on the books. Enforcement is deficient because resources are not available for proper surveillance of domestic and industrial waste disposal facilities nor to provide the legal and scientific staffs to put the programs into full effect.

There are two areas of the state which have been removed from the jurisdiction of the State Board of Health by special acts of the Florida Legislature.⁴² By these acts, Nassau and Taylor Counties were declared to be industrial counties and the acts state that it is in the interest of the public that industry be empowered to discharge industrial and chemical wastes into the tidal waters of Nassau County and into the Fenholloway River and the Gulf

42. Florida Special Acts 1941, c. 21415; Florida Special Acts 1947, c. 24952.

of Mexico into which the Fenholloway flows from Taylor County.

"If attacked, the legislation might be held unconstitutional on the grounds that it deprives the riparian owners on these waters of property rights without compensation in violation of the state and federal constitution."⁴³

Legal Action by the State Board of Health

Below are some of the more than 62 legal actions taken by the State Board of Health on behalf of the citizens of Florida since 1958 in relation to water pollution control. Some of the cases are still pending; others were dismissed because of lack of conclusive evidence or because of a release by another agency; other cases were not pressed because the situations had been corrected; or the county solicitor did not press the case.

State of Florida ex rel Sowder vs. American Cyanamid Company

Stream pollution of Turkey Creek, Alafia River and Lithania Springs occurred on February 5, 1965. A dike adjacent to waters of the State of Florida ruptured discharging over 35 million cubic feet of water containing phosphate waste. **DISPOSITION:** Injunction suit sought March 4, 1965, by State Board of Health to require control of company facilities adjacent to state waters. This case dismissed by Circuit Court on basis of a release by director of Florida Game and Fresh Water Fish Commission. Damages of \$20,000 were paid to the Commission by the company on March 12, 1965.

State Board of Health vs. V-C Chemical Company, a division of Socony Mobil Oil Company, Inc.

Stream pollution of Peace River occurred on October 26, 1964. Company negligently maintained a wooden overflow structure in slime pond. It collapsed and two to five "acre feet" of phosphate slime were released into the Peace River. **DISPOSITION:** Referred to Polk County Solicitor on January 29, 1965; Solicitor advised

⁴³. *Op. Cit. Florida's Water Resources*. pp. 8-9.

State Board of Health that "prosecution not justified" on January 13, 1966.

State Board of Health ex rel Sowder vs. Container Wire Products Company

Water pollution occurred on Ribault River and Cedar Creek in Duval County. Company has failed to meet approval of State Board of Health for waste treatment pursuant to orders of the agency of September 14, 1966. Suit filed by agency on September 16, 1966, requesting injunction to hold up operation until treatment devices are built.

State Board of Health vs. Sloan Rental, Inc.

Criminal action was taken against this development of eight rental units at Tavernier in the Keys. Developer was utilizing dynamited holes in coral for discharge of human wastes. Under direction of legal staff, dye tests indicated pollution into tidal waters surrounding this Key. After extended period of time, the Court found the defendant corporation and its president guilty, giving him 30 days to remove the rental units, which consisted of 16 X 16 foot plywood shacks. Removal was effected and case closed.

State Board of Health vs. Lovering and Cranfield

Case taken before County Judge's Court in 1961 in Manatee County involved a chicken canning plant north of Palmetto. Unapproved waste treatment with holding ponds was adjacent to McMullin Creek, a tributary of Terra Ceda Bay tidal basin. Samples taken under the direction of State Board of Health attorney indicated salmonella present in holding basin and adjacent tidal waters. The company was ordered to close down, which resulted in termination of a \$50,000 government contract on canned chicken for the U. S. Army and subsequent bankruptcy of the company. The company has reorganized and is currently in operation utilizing approved facilities and has recovered its previous losses.

Are We Willing to Pay for What We Want?

Only about five to 10 per cent of Florida's waters are polluted but more streams, lakes and springs will become "dirty waters"

unless the State Board of Health is given the additional resources to control pollution.

Howard W. Chapman, associate regional health director for environmental health services of the U. S. Public Health Service, states that Florida needs a "... minimum staff of 58 persons, but a staff of 93 persons for its water pollution control program would be more desirable. To support this staff, a minimum annual budget of \$528,000 would be required, and a desirable budget of \$847,000. Florida's present staff and budget is less than one-half of the minimum recommended." These figures do not reflect the 356 environmental health personnel of the County Health Departments who are involved in local program nor local budgets.

Mr. Chapman further said that the State Board of Health has done an excellent job in obtaining treatment of wastes from municipalities. The statistics on the number of municipal waste treatment plants built in Florida during the last few years are impressive. Between 1961 and 1965, 1003 separate treatment plants were approved for construction. No state in the southeast region of the United States, and only a few nationally, have had the rate of population growth and urban expansion, with its accompanying municipal waste problems, as has Florida.

The State Board of Health has an effective water pollution control program which has done much to control or minimize pollution in the state. To cope with the pollution problems associated with the population growth, urban and industrial expansion, the following is needed by the State Board of Health:

- * Strong legislation providing all the consolidated authority to do a complete job;
- * Adequate budget and staff, and
- * Long range planning for water pollution control to be initiated which includes a comprehensive approach for stream studies and abatement of pollution from all municipalities and industries.⁴⁴

44. Appendix E. Howard W. Chapman's letter.

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APPENDIX A

- (1) Letter from Ray L. Wilson, Attorney, Jacksonville, Florida, to Wilson T. Sowder, M.D., Florida State Health Officer.
- (2) Letter from Wilson T. Sowder, M.D., Florida State Health Officer to Ray L. Wilson.

APPENDIX A (1)

Law Office of
RAY L. WILSON

Telephone 355-1155
(Area Code 904)

**BARNETT NATIONAL BANK BUILDING
JACKSONVILLE, FLORIDA 32202**

August 5, 1966

Dr. Wilson T. Sowder
State Health Officer
State Board of Health
Jacksonville, Florida

Dear Dr. Sowder:

I notice in today's press that you plan to make a strong bid for an appropriation of \$5,000,000.00 to aid the Board's efforts in improving the quality of the State's air and water resources.

I have not investigated, verified, nor validated the common knowledge around Duval County that the Municipality of Jacksonville and others dump several million gallons of raw sewage per day into the St. Johns River. However, if that is true, and if it is, the State Board of Health should know it. I don't understand why you do not take advantage of Section 387.08 of the Florida Statutes and endeavor to eliminate the portion of water pollution mentioned here.

I would like to hear from you regarding this matter.

Very truly yours,

RAY L. WILSON

APPENDIX A (2)

FLORIDA STATE BOARD OF HEALTH

Wilson T. Sowder, M.D., M.P.H., State Health Officer
Malcom J. Ford, M.D., M.P.H., Deputy State Health Officer
Jacksonville, 32201

August 15, 1966

Mr. Ray L. Wilson
Attorney at Law
Barnett National Bank Building
Jacksonville, Florida 32202

Dear Mr. Wilson:

Further reference is made to your letter of August 5th about raw sewage being dumped into the St. Johns River by the City of Jacksonville and asking why the State Board of Health does not take advantage of Section 387.08 and endeavor to eliminate the water pollution involved. I have now had an opportunity to discuss this matter with Mr. David B. Lee, Director of our Bureau of Sanitary Engineering; and we both have had an opportunity to review our files and refresh our minds on this important subject. I am answering your question in some detail because it is an important one. Furthermore, the State Board of Health itself has for several years been responsible for letting all concerned know that this is the most outstanding example of water pollution in the whole state.

The Florida State Board of Health has, especially during the past 20 years, worked very diligently throughout the state to prevent pollution and preserve the water resources for the protection of the health of the people as well as for the value of these waters for fishing, recreation, and other purposes; and has worked primarily through its Bureau of Sanitary Engineering under the able direction of Mr. David B. Lee. It is well known throughout the country that the Florida State Board of Health and the staff of the Bureau of Sanitary Engineering under Mr. Lee's direction have done outstanding work in this field. Concrete evidence of this is contained in one of the enclosures indicating Mr. Lee's selection for a National Award for his outstanding work in this field. I request that you not give any publicity to this until the organization involved has made the formal presentation next month.

The fact that the people of the State of Florida are now aware of the problem of pollution is due primarily to these vigorous efforts of the Florida State Board of Health during the past 20 years. During that time and as a result of this effort a total of 1,550 sewage treatment plants have been built and the spread of water pollution has been halted in spite of rapidly increasing industrial developments and the rapid growth of the population. It is, of course, true that we still have many difficult problems ahead of us which that in Jacksonville is an outstanding example. However, the larger percentage of the waters of the state, including the rivers, lakes, and beaches, are not polluted and probably less than five to 10 per cent of the waters of the state have any gross pollution. These facts are important, and related to your question in that they put the Jacksonville problem in proper perspective.

The Florida State Board of Health and the United States Public Health Service made an extensive pollution survey of the St. Johns River during the late 40's and a copy of this report was furnished the City of Jacksonville. The State Board of Health has continued since then to exert pressure upon the city as well as the rapidly growing area surrounding Jacksonville, and we know we have accomplished a great deal. As you know, today we have more population in the suburban area surrounding Jacksonville than we do within the corporate limits, and our agency has been successful in bringing about the construction of some eighty large treatment plants in the county to prevent further pollution of the St. Johns River. It has been the firm policy of the State Board of Health for many years to prevent any further degradation of the rivers and lakes of the state.

The City of Jacksonville in 1953 retained Dr. Abel Wolman of Johns Hopkins University, a consulting engineer with a national, and even an international reputation, in the field of water pollution. After his survey, he made a report stating that the city did not need waste treatment for many years in the future.

Doctor Wolman was also retained as the consulting engineer by the City of Sanford; and, in his report of June 1, 1953, he also stated that Lake Monroe could assimilate all sewage from the city. Even working against the handicap of such opinions, we are happy to say that Sanford now has a fine sewage treatment plant, and we are hopeful that it will upgrade this to secondary treatment in the near future.

Doctor Wolman has for many years been an outstanding advocate of the cliché that "the solution to pollution is dilution." If

this view of the disposal of raw sewage were valid anywhere in Florida, it naturally would be here in Jacksonville where we have the largest volume of moving water available anywhere in the state.

On September 28, 1955, the consulting engineering firm of Metcalf & Eddy from Boston, Massachusetts, filed their report and recommendations for a master plan covering the Jacksonville-Duval area. This report also stated that "the substantial elimination of the discharge of untreated sewage from the City of Jacksonville into the St. Johns River and its tributaries would not be needed until the fourth stage of the program." They also listed the costs of the various phases, and the total was \$109,600,000, a sizeable sum of money. About that time the State Board of Health had been requested by the city to approve the sewerage of northwest Jacksonville, the unsewered portion of the city, and to pipe this waste into the river at the Main Street Bridge untreated.

In spite of the opinions from these distinguished sources, the State Board of Health and its Bureau of Sanitary Engineering has steadfastly rejected these proposed solutions to the problem. On November 1, 1955, the State Health Officer notified the city that we would not approve this plan and that the State Board of Health would use all legal means to prevent any further degradation of the river. Thereupon, the city directed its engineers to plan a sewage treatment plant for the first phase of the master plan; and, on December 15, 1955, the consulting engineers submitted their preliminary report which was approved in principle by the State Health Department.

The city proceeded on this first stage operation and on December 12, 1961, the City of Jacksonville dedicated its first sewage treatment plant located on Tallyrand Avenue. This is a very fine plant and has received the award of the State Board of Health several times for good operation. I am attaching a copy of the dedication brochure for your information.

Since that time, the board has worked with city officials and the city now has under active development a program, up-dating the Metcalf & Eddy report to eliminate raw sewage and industrial waste flowing into its tributaries as the first project of the first phase. You may have observed in recent newspaper articles that the Housing & Urban Development Agency has reserved \$672,000 as a grant in aid to the city for this program. This will eliminate raw sewage and other deleterious materials in McCoy Creek. Other

projects in this program are in the planning stages. Phase 3 will include the St. Johns River trunk sewer and the South Jacksonville trunk sewer. A rough estimate of the cost of this program is in the neighborhood of \$25-\$30 million. We are confident that the city will continue their implementation of this plan.

With the above information as a background, I shall now try to answer your specific question. It has not seemed to us here at the State Board of Health that section 387.08 of the law which provides for a fine of up to \$500 for violations was likely to be very effective in dealing with Florida's second largest city in connection with potential expenditures of over \$100,000,000. Also, I have already called your attention to the fact that the city has had available outstanding expert advice contrary to the position which the State Board of Health has consistently taken. We believe that such testimony would have made it somewhat difficult for the State Board of Health to win a case in court. And last of all, the State Board of Health has never had an adequate legal staff to develop and follow through the courts on a strictly law enforcement basis the many cases that could be made. We are, incidentally, asking the next legislature to provide funds for substantial increases in our legal staff. We have also been conscious of the fact that where such large sums of money have to be spent to solve a problem, these can only be provided by interested and willing taxpayers. We have believed, therefore, that our long-term campaign of educating the public as to the need for the prevention and abatement of water pollution would provide the best assurances of appropriate remedial measures being taken.

We appreciate your interest in the environmental problems of this area of Florida, and we hope we can enlist your support in our efforts to provide adequate technical resources in the job needed ahead. This, of course, means adequate manpower, housing, laboratory facilities and equipment as well as adequate salary schedules for engineers and scientists.

If I can furnish you with any further information, please let me know.

Sincerely,

Wilson T. Sowder, M.D.
State Health Officer

APPENDIX B

Report from Vincent D. Patton, director of Division of Industrial Waste, Bureau of Sanitary Engineering, Florida State Board of Health.

APPENDIX B

September 6, 1966

To: Mr. David B. Lee

From: Vincent D. Patton

Subject: Health Notes—Water Pollution Issue

Reference the attached memorandum from Mr. Schoonover, we are furnishing a list of spots where corrective action has been taken as well as needs for additional action.

Duval County

St. Johns River

Alton Box Board Company—Has been informed that additional waste treatment will be required.

Ribault River

Gold Merit Packing Co.—Installed treatment plant.

Glidden Company—Installed an oil separator and sewers—working on the next phase.

The other companies (Container Wire and Wootton Fiber) are still delaying. These have been referred to Dr. Sowder for possible legal action.

Cedar River

Allied Petro-Products, Inc.—Installed an oil separator.

Seaboard Airline Railroad—Installed two oil separators.

Painters Poultry—Installed treatment facility.

McCoys Creek

City of Jacksonville and others discharging untreated waste.

Dade County

Miami International Airport—Force main installed which connected to the City of Miami system to collect and transport waste from the airport and industrial area immediately east of the airport. This removed waste which could have gone into the ground in the vicinity of the well field.

Putnam County

Hudson Pulp and Paper Company—Installed primary clarifier. Working toward secondary treatment.

Southland Packing Company—Installed new sewers to pipe their waste to Palatka's sewage treatment plant.

Brevard County

Cape Kennedy—New plating waste treatment plant being installed.

Santa Rosa County

Navy installation put in treatment for airplane washing facility. Escambia Chemical Corporation—Reduced the strength of its waste through in-plant practices so as not to affect Escambia Bay.

Escambia County

Newport Industries—Installed a treatment plant.

Armstrong Cork Co.—Installed treatment plant. Both of these companies had polluted Bayou Chico with wood waste.

St. Regis Paper Company—Installed settling basins and a lake to remove solids from the waste and provide some treatment.

Pensacola Navy Base—Working on design for treatment of their industrial waste.

Chemstrand Corp.—Installed two deep disposal wells for strong waste. Working to reduce contamination of cooling water.

Lake County

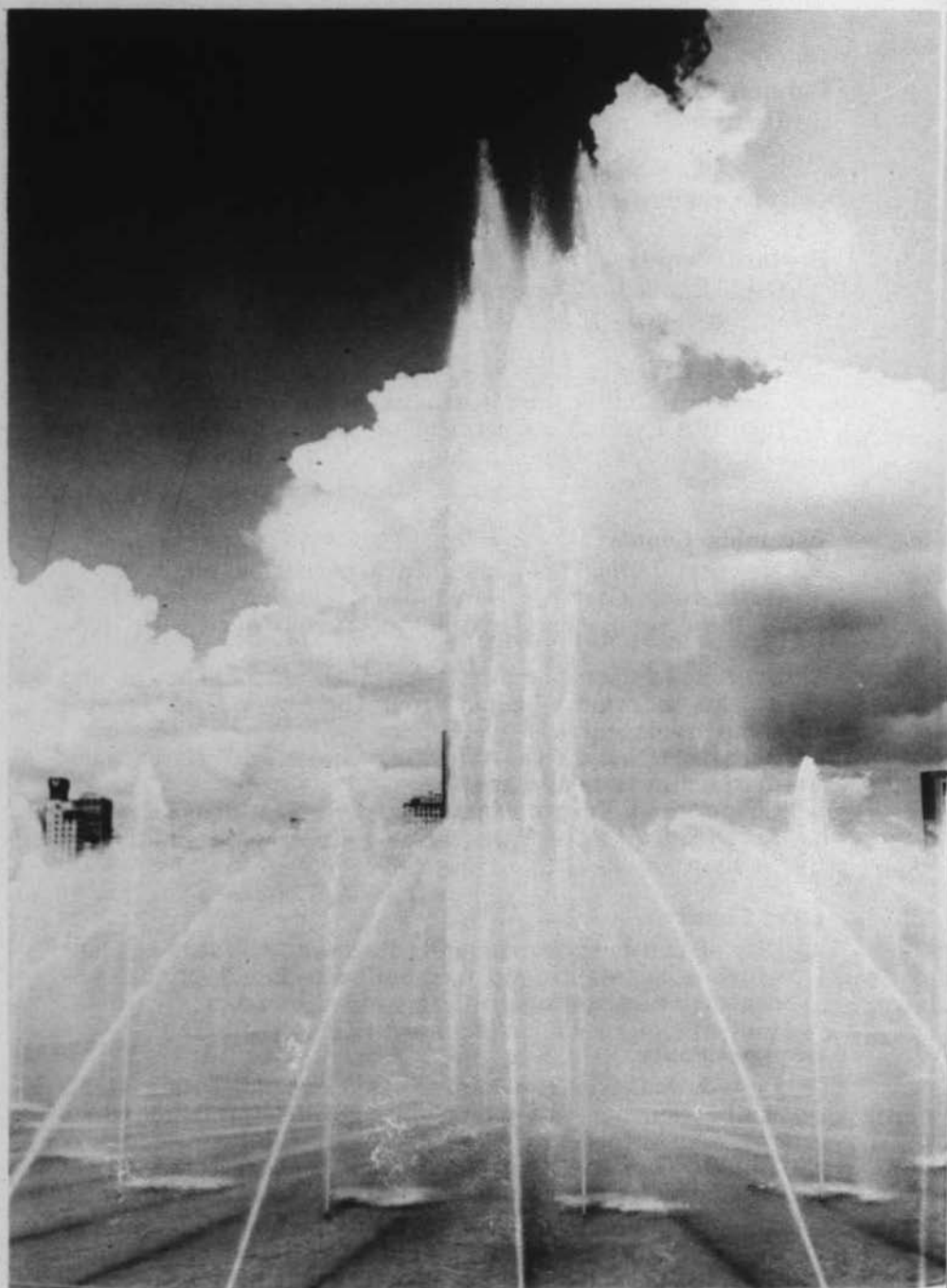
City of Leesburg is expanding its sewage treatment plant which will treat waste from Minute Maid's citrus concentration operation.

Orange County

Plymouth Citrus and Minute Maid expanded their treatment facilities and stopped polluting the lake which was nearby

Winter Garden Citrus—This has been referred to Dr. Sowder for prosecution.

Many treatment plants have been installed for small plants such as laundries, meat packing plants, etc. Several large plants have been installed to treat the wastes which would otherwise cause pollution. This would include industrial giants such as Martin Company, Orlando; Borden Company, Bradenton; Occidental, Hamilton County; Pratt & Whitney, West Palm Beach.



Clean water has many uses, including such esthetic pleasures as provided by Jacksonville's Friendship Fountain.

APPENDIX C

Reports from regional sanitary engineers

- (1) Report from Nick Mastro, Northeast Florida Regional Office
- (2) Report from G. W. Folke, Central Florida Regional Office
- (3) Report from E. M. Larsen, Southwest Florida Regional Office
- (4) Report from Richard Starr, Southeast Florida Regional Office.
- (5) Report from K. K. Huffstutler, director of Polk-Hillsborough Air Pollution Control District, Winter Haven

APPENDIX C - 1

August 30, 1966

TO: David B. Lee

FROM: Nick Mastro

SUBJECT: Forthcoming Issue of Health Notes

In reviewing the activities of this office over the past 20 years in regard to "Stream Pollution," there are several factors to consider, this being the great influx of people to the State of Florida and along with this, the increase of industrial plants.

My personal reaction to this question is that overall we have done a tremendous task of controlling the pollution of our streams under adverse conditions. These conditions are being understaffed and somewhat without any legal or political support from those in position to assist us.

In my opinion, the stream pollution is not more acute now than it was 20 years ago. It's true that there are streams that were polluted 20 years ago and are polluted today. Most of these, such as the St. Johns River, will within the next few years improve considerably, partly because of our unrelenting program of surveillance and of constantly pressuring the parties concerned into providing the necessary treatment facilities.

Today we have approximately 120 sewage treatment plants serving subdivisions and cities in this region. Twenty years ago there was no adequate sewage treatment plant in existence in this region.

Insofar as treating waste from our industrial plants, it must be admitted that in this area we have not progressed as well as in providing domestic waste facilities. There are several reasons for this; first, industries in the past have moved into this area

and started production without our knowledge; others have come in and tied onto existing sewer lines that discharged untreated waste to our streams; and then too, others have come in and provided some treatment devices which were operated for awhile and then bypassed when found inadequate due to plant expansion or when the cost of operation and expansion of facilities were found to be, in their opinion, unwarranted.

The fact that stream pollution has been brought to the public's attention through news media, the Federal Government's action, etc., would make the average citizen more cognizant and aware of pollution today. This, of course, is what we've been trying to do since as long as I can remember. Now that it's the topic of conversation, we have been criticized for what we haven't done. What we have done with what manpower and assistance that has been made available to us, the average citizen and news media are uninformed about. I don't know that we should have to defend our position, but I do feel all the facts should be made known and let the public think for themselves.

I definitely do not think we have gone backwards. At the same time, with adequate implementation of our programs, we certainly could have moved faster and corrected many problems that face us today that have been around for quite some time. None of this is news to you, but, nevertheless, it does summarize what has transpired in this field as far as I am concerned.

With the emphasis that the Federal Government has placed on stream pollution, I think that the state legislature, the local governments and even our own State Board of Health will be inclined to support us even more than they have in the past. We know what the problems are and in the majority of cases know the cure. We do need to be recognized and given whatever the assistance needed to expedite and correct these problems and any that might arise in the future.

APPENDIX C - 2

August 29, 1966

MEMORANDUM

TO: Mr. David B. Lee

FROM: G. W. Folke

SUBJECT: **Forthcoming Issue of Health Notes,
Entitled "Water Pollution"**

We are in receipt of a copy of your memorandum under date of August 24, 1966, with regard to the subject and we would offer the following comments:

Speaking for the Central Florida Region, the writer feels that definite progress has been made in the field of water pollution control over the last ten to twelve years and particularly in the last five years, and especially in the field of sewage treatment. At the present time I know of only two municipalities in the eleven counties of the Region which discharge inadequately treated sewage to surface waters. One of these is the Town of Crystal River and, as you know, we have approved plans for secondary treatment for this community and financing is the only hurdle to be overcome in order that construction may start. The other is the Town of Cedar Key and this community is also working toward adequate treatment facilities.

I am not too familiar with the exact dates that older treatment plants were constructed but I would imagine that in 1947 there were possibly only two treatment facilities outside of septic tanks in operation in this Region. One of them would be the existing Imhoff tank at Crystal River and possibly the other would be the original intermediate plant at Daytona Beach.

The writer has been in this Region since August 1, 1958, and since that time the following municipal facilities have been constructed or expanded. I am sure that many of the facilities con-

structed in the last eight years got their impetus from Mr. Berkowitz and personnel from the Jacksonville office:

Orange County

1. Southwest Orange County sewage treatment plant modified to treat additional flows.
2. Northwest Orange County plant (Pine Hills) enlarged.
3. The City of Maitland sewage collection system and treatment plant constructed.
4. I do not have the necessary records in this office but I believe the City of Apopka and City of Winter Garden treatment plants were expanded.
5. City of Winter Park sewage treatment plant is presently being expanded.
6. City of Orlando No. 2 sewage treatment plant constructed.

Seminole County

1. City of Sanford Plant constructed.

Osceola County

1. City of St. Cloud provided additional capacity and secondary treatment, whereas the original plant provided primary treatment only.
2. City of Kissimmee. Plant expansion presently under construction.

Volusia County

1. City of Ormond Beach constructed sewage collection and treatment facilities.
2. City of Holly Hill constructed sewage collection and treatment facilities.
3. City of Daytona Beach constructed first phase of new sewage treatment plant to provide secondary treatment instead of primary treatment as previously constructed. Plans have been approved for the second phase of construction to double capacity of this plant.
4. City of Port Orange constructed sewage collection system and treatment plant.
5. City of New Smyrna Beach constructed sewage collection system and treatment plant.
6. City of Edgewater constructed sewage collection system and treatment plant.
7. City of Deland constructed plant expansion to provide secondary treatment whereas primary treatment was previously practiced.

Lake County

1. City of Mt. Dora constructed sewage collection and treatment plant.
2. City of Eustis constructed plant expansion which doubled capacity of their secondary treatment plant.
3. City of Leesburg plant presently under construction to provide secondary treatment whereas primary treatment is presently practiced. This new plant will also treat waste waters from the Minute Maid citrus processing plant.
4. City of Umatilla sewage treatment plant recently completed.

Marion County

1. City of Belleview sewage collection and treatment facilities constructed.
2. City of Dunnellon sewage collection and treatment facilities constructed.
3. City of Ocala planning is presently underway for sewage collection and treatment for a large area recently annexed to the City.

Sumter County

1. City of Wildwood sewage treatment plant and additional sewers constructed.

Pasco County

1. City of New Port Richey sewage collection and treatment facilities constructed.
2. City of Zephyrhills. Final construction plans for sewage collection and treatment are presently being prepared as result of a successful referendum for the project.

Hernando County

1. City of Brooksville sewage treatment plant constructed. Plans are presently being prepared for expansion of the sewage treatment plant and plans for some sewer extensions have been approved.

Citrus County

1. City of Inverness. Sewage collection and treatment facilities constructed.
2. Town of Crystal River. Plans have been approved for a sewage treatment plant to provide secondary treatment and financing is presently being worked out.

Levy County

1. City of Williston had a sewage treatment plant prior to the writer's entry into the Central Florida Region.

Several municipalities, which are presently served by individual septic tank installations, have had and are in the process of having prepared engineering reports relative to sewerage. Undoubtedly within the next few years sewage collection and treatment facilities will be forthcoming in many of these communities.

In the opinion of the writer, our greatest gray area relative to sewage collection and treatment is in areas outside of municipalities where County Commissions and County Health Departments have permitted heavy concentrations of population to be served by individual septic tank, and tile drainfield installations. Our only salvation in these areas is that they be annexed to municipalities where sewerage can be provided or county sewer districts must be formed to provide the necessary service. This problem gets back to our old "preaching mission" that we must have good sound planning and zoning in these areas.

In addition to the municipal sewage treatment plants, we have had several hundred sewage treatment plants installed to serve subdivisions, hotels, motels, shopping centers, trailer parks, camps and camp grounds, and other types of individual installations. The majority of these installations have been made within the past ten years.

With regard to industrial wastes, I believe that we have made good progress in securing adequate treatment in new developments. Here, one of our gray areas appears to be in the citrus processing industry. From what I have seen in this Region, most of the industry is content to dump their wastes without treatment.

Another definite threat that I see to our surface waters, especially in areas where there is considerable swampland adjacent to the open waters, is the installation of muck farm operations. This is an item that is going to have to be resolved by the State Board of Health and agricultural interests.

I realize this is not in capsule form as requested, but it is felt that the foregoing information is pertinent. If you desire any further information or opinions, kindly advise.

APPENDIX C - 3

August 31, 1966

TO: Mr. David B. Lee

FROM: E. M. Larsen

SUBJECT: General Strm. Pol.
Forthcoming Issue of Health Notes,
Entitled "Water Pollution"

This memorandum and attachments are to conform to your request in a memorandum dated August 24, 1966 bearing the above subject matter.

THE PAST—Please refer to Chart No. 1, attached, which indicates planned expenditure on plans approved by our agency covering sewerage and industrial waste projects from 1951-1965. At the time of my employment in July, 1951 there existed only three sewage plants in the southwest region. One of these was the City of Sarasota plant, which was completed in early 1951. The other two plants were those located at the G. Pierce Wood Memorial Hospitals located in Arcadia. These were built apparently by the army during World War I or II.

The sewage program in southwest Florida really got under way during 1955 when more than two million dollars was spent. Since 1955 through 1965, dollar volume has varied considerably. The average spent, based on a fifteen year average, was over 1.9 million; the average for the last ten years has been over 2.6 million; and the average the last five years has been over 2.3 million dollars. The number of sewage projects has averaged 35.8 the last fifteen years and has reached an average of 65.8 projects in the last five years.

The industrial waste program is also expanding and developing in this area. Please refer to chart for details.

PRESENT CONDITIONS—Please refer to chart No. 2 indicating the number of sewage plants and type. Since 1950 this area

has gone from two sewage plants to 140 as of this date. We are now in the throes of needing plant expansions at some of these plants. The trickling filter plants that are overloaded are: The City of Sarasota, Kensington Park Subdivision in Sarasota County, and the Punta Gorda Plant in Charlotte County. Sarasota has hired an engineer to develop plans for expansion, Kensington Park has had plans approved for expansion but has refused so far to commence with the construction, and Punta Gorda has not so far done a thing.

The air plants that are overloaded are Naples, which has a construction expansion program under way; and the South Gate Plant in Sarasota County has expansion plans approved, but construction has not commenced.

At the present time we have only two municipalities that are dumping raw, untreated waste into our streams. They are: La Belle, which has had plans approved, and construction should commence sometime during late 1966 or early 1967; and the City of Everglades, with plans approved, but the City Commission has passed a resolution indicating that they will not build the plant. We are experiencing also some sewage problems from septic tank failures in various areas of my Region, and one of these is the Charlotte Harbor area, and the other is the Englewood area. These areas are organized into the Englewood Sanitary District and the Charlotte Harbor Association. These organizations are in the water supply business at the present time, which should assist us in getting sewers and sewage treatment in these sections in the future. In the Russell Park area east of Ft. Myers we have some dumping of sewage in the Caloosahatchee River, and I do strongly believe that we have a pollution problem through storm drains from the City of Moore Haven, but have no documentary evidence.

In the field of industrial waste we have several problems. One of these problems is the discharge of waste from the Gulf Naval Stores, Nocatee, Florida, into Peace River; the other industrial waste problem we have is in the Hendry and Glades counties regarding sugar waste, and citrus waste discharge at Arcadia. (Bradenton also has a citrus waste discharge.)

POSSIBLE FUTURE CONDITION—It is felt that our sewage program will proceed year by year at the rate of at least two million dollars per year, and our Industrial Waste program should continue at the rate of approximately \$75,000 per year. This

area I do believe needs legal assistance, and very likely legal action to solve some of its problems in the field of stream pollution and potable drinking water. The communities involved are the City of Everglades and Moore Haven. We have tried using education, discussion, persuasion, conciliation, etc., but these two communities hold an open defiance to the State Board of Health, and possibly any other controls outside their communities. You, Mr. Baker and Mr. Miller are independently, or collectively, familiar with these two problems. The matter of sewage treatment processes being built for motels, trailer parks, hotels, etc., does not constitute a problem at all due to the Sanitary Code requirements. Developing subdivision developments with septic tanks, will continue to be a problem and will effect the future in this field unless we take definite steps, refortifying our controls over the installation of septic tanks in subdivisions. In areas where we have open defiance, like the City of Everglades, we will run into trouble unless we take legal action to get compliance. During my early years in the region we were happy to obtain almost any degree of treatment of our sanitary waste, such as primary treatment only. Today our thoughts have changed in that we are now expecting at least 95-98% removal, but will accept nothing less than 80-85%. Even with the 80-85% it is doubtful whether it would be approved without ponds, which give us a better degree of treatment. As can be seen from Table 2, more than 77% of the sewage plants in this area have a degree of treatment of 93-99%.

Recent additional personnel will assist greatly in the field of operation and expansion programs. It is felt that the present staff is still inadequate when you realize that we have 140 sewage plants, many laundry plants, a large number of water treatment facilities and an expanding number of incinerators. Mr. Vincent Patton has written a large number of letters to the laundry plants in this area indicating inadequate treatment and/or operation of the laundry treatment facilities. This problem will become much more severe unless we tighten up to a point where we do not permit laundry plants to be installed unless they are connected to a sanitary sewer.

SUMMARY—It is my feeling that we have made a great deal of progress in this area as can be seen by the fact that over 28.7 million dollars has been spent on sewage facilities in this area and over \$560,000 on industrial waste treatment since 1951. However, I do feel that we are keeping ahead in the field of sewage where we take care of the transit business such as motels, trailer parks, apartments, etc.; but it is my feeling that we are slipping behind where our permanent population is developing. We have a tremendous amount of septic tanks being installed in subdivisions that should not be granted by the County Health Departments. In

the field of industrial waste I feel that we are moving forward. It is felt that this is due to several reasons, and they are:

- (1) Much fewer installations involved.
- (2) No substitutes available in treatment of industrial waste, such as several septic tanks for sewage treatment plants.
- (3) The County Health Departments have no jurisdiction in this field as they do with septic tanks in the field of sewage treatment.
- (4) The promotion of the air and water pollution programs by the State Board of Health and the Federal Government.
- (5) Public opinion is concerned about pollution, water and air, caused by industry. It is felt we get better support from the public in this field.

I realize that this is a rather long memorandum, however it was felt it was better to give you all the data available, from which you could sift and screen the data you would like to use in the forthcoming issue of Health Notes, "Water Pollution."

Chart No. 1

SOUTHWEST REGION — 8 COUNTIES

	Population	No. of MS Projects	No. of MS Projects Acc. Totals	MS Projects Cost—\$	MS Projects Cost—\$ Acc. Totals	No. of IW Projects	No. of IW Projects Acc. Totals	IW Proj. Cost—\$	IW Proj. Cost—\$ Acc. Totals	No. of Operating MS Plants
1951	94,630	0	0	0	0	0	0	0	0	3
1952	97,810	1	1	26,000	26,000	0	0	0	0	
1953	101,030	0	1	0	26,000	0	0	0	0	
1954	109,836	5	6	70,601	96,601	1	1	2,000	2,000	
1955	114,653	6	12	2,114,748	2,211,349	2	3	5,000	7,000	
1956	130,000	9	21	1,703,514	3,914,863	4	7	11,000	18,000	17
1957	143,000	20	41	862,708	4,777,571	3	10	11,000	29,000	
1958	156,400	44	85	3,876,320	8,653,891	1	11	4,600	33,600	20
1959	167,400	56	141	4,567,363	13,221,254	6	17	19,300	52,900	
1960	187,500	67	208	3,918,581	17,139,835	4	21	93,500	146,400	
1961	218,800	79	287	2,154,570	19,294,405	5	26	26,000	172,400	
1962	223,600	60	314	1,625,126	20,919,531	7	33	34,000	206,400	
1963	239,400	58	405	3,374,671	24,294,202	12	45	198,900	405,300	
1964	234,200	59	464	1,850,937	26,145,139	6	51	139,864	545,164	132*
1965	243,700	73	537	2,640,693	28,785,832	3	54	15,000	560,164	
Ave/year last 15 years			35.8		1,919,056		3.6		37,344	
Ave/year last 10 years			52.5		2,657,449		5.1		55,316	
Ave/year last 5 years			65.8		2,329,200		6.6		82,753	

* As of October 1, 1964

Chart No. 2

SEWAGE TREATMENT PLANTS

Imhoffs and ponds	6
Imhoff with secondary, and maybe ponds	13
Primary, trickling filter & secondary	11
Primary, trickling filter & secondary (overloaded)	3
Extended air, contact, activated sludge and maybe ponds	99
Extended, air, contact, activated sludge, and maybe ponds (under construction)	5
Air plants (overloaded)	2
Combination air plant with primary, trickling filter, secondary and pond	1
TOTAL	<hr/> 140

MUNICIPALITIES WITHOUT TREATMENT

(Raw sewage being dumped)

- La Belle—Plans approved. Construction will start sometime during late 1966 or early 1967.
- Everglades—Plans approved. City Council informed us they will not build.
- Russell Park, near Ft. Myers—No plans to change this problem by S/D.
- Englewood—No plans being made yet by CHD, and this office has appeared at public meeting.
- Charlotte Harbor, near Punta Gorda—No plans by area being considered.
- Moore Haven—Possible septic tank discharge thru storm drains and etc., into Caloosahatchee River.

INDUSTRIAL WASTE DISCHARGE

(No treatment and more needed)

- Citrus Plant at Arcadia
- Gulf Naval Stores at Nocatee
- Sugar Mill waste in Hendry and Glades Counties

APPENDIX C - 4

Date: August 29, 1966

To: Mr. D. B. Lee

From: Dick Starr

Subject: Forthcoming Issue of Health Notes, Water Pollution

In reply to your memo of August 24, I would like to break my region down into three categories to answer your question about pollution control. These categories would be the Keys, the Indian River Counties and the interior counties.

I would say that we have made progress in the Keys. This is mainly due to the fact that methods of waste disposal in that area have been so primitive that almost anything would be an improvement. To the best of my knowledge there are no more tidalflush cesspools being installed. In most cases these have been supplanted by septic tanks with a modified sand filter drainfield. This system has not been as successful as it should be due to the bootlegging of local unsatisfactory calcite material as sand. In the larger installations we are meeting with considerable success in providing package treatment plants and in many cases reclaiming the effluent from these plants for irrigation purposes. Several subdivisions have also provided sewers and treatment and there is evidence that the Naval installations will eventually provide effective treatment for their wastes. Industrial waste is not a significant problem in this area with the exception of laundry waste. There are still zones of pollution along the shorelines but they need to be better defined before the source can be determined.

The three counties along the Indian River are at best just holding their own in the overall picture. We have made notable progress in treating the municipal waste that used to go in the Indian River raw and have removed a number of tail pipe discharges so that we show a net gain on the river. **However nothing** has been accomplished on the sewage from boats and from the **bridge tender houses at the draw bridges**. We continue to lose ground in the pollution generated by the **continuing proliferation of septic tanks**.

The potential pollution from discharge from agricultural lands increases constantly and there have been some problems with citrus processing waste that could increase as more groves come into production. There is also the new problem of sedimentation in the saline estuaries from expanded drainage works.

Okeechobee County is definitely a problem area and appears to be getting worse. While we have a sewage treatment plant for the City of Okeechobee the discharge of canning waste to this plant knocks it out for several months at a time with resulting gross pollution of Taylor Creek. If this problem can be solved and we get tertiary treatment of all sewage, the domestic waste situation will be satisfactory. However the enormous growth of the dairy industry in this county has created a problem of manure disposal which is going to be very serious if a solution for proper disposal is not worked out. Since this county is primarily agricultural there is not a serious problem at the moment from septic tanks but the areas near the lake will become critical in the future.

Highlands County has shown progress in municipal waste treatment but there is room for improvement and there are far too many septic tanks being installed. Industrial waste is not a problem at present and the agricultural operations do not appear to be harming the lakes in this area. I would say we were holding our own except for the septic tanks.

In viewing the overall picture I am forced to conclude that we are losing ground in combating pollution and will continue to do so as long as the concept that growth of any type is progress and until the agricultural interests are made to realize that they must conduct their operations so as to prevent pollution.

APPENDIX C - 5

September 2, 1966

TO: Mr. D. B. Lee

FROM: K. K. Huffstutler

SUBJECT: Stream Pollution, General

With regard to your memo of August 24th concerning information on water quality control for "Health Notes," we assume that our opinions are desired, since we received a copy of the memo. The following is a composite of the thinking of our people involved in water quality.

We do not feel that the State Board of Health is actually going "backward," however, we are not keeping pace with the growth of the state even when ignoring the unbalanced ratio of state population to agency resources.

Speaking strictly from an industrial waste and water quality standpoint (no domestic waste considered), some of the glaring shortcomings in the water quality program that could possibly be corrected without significant additions to personnel and other resources involve the modernizing of:

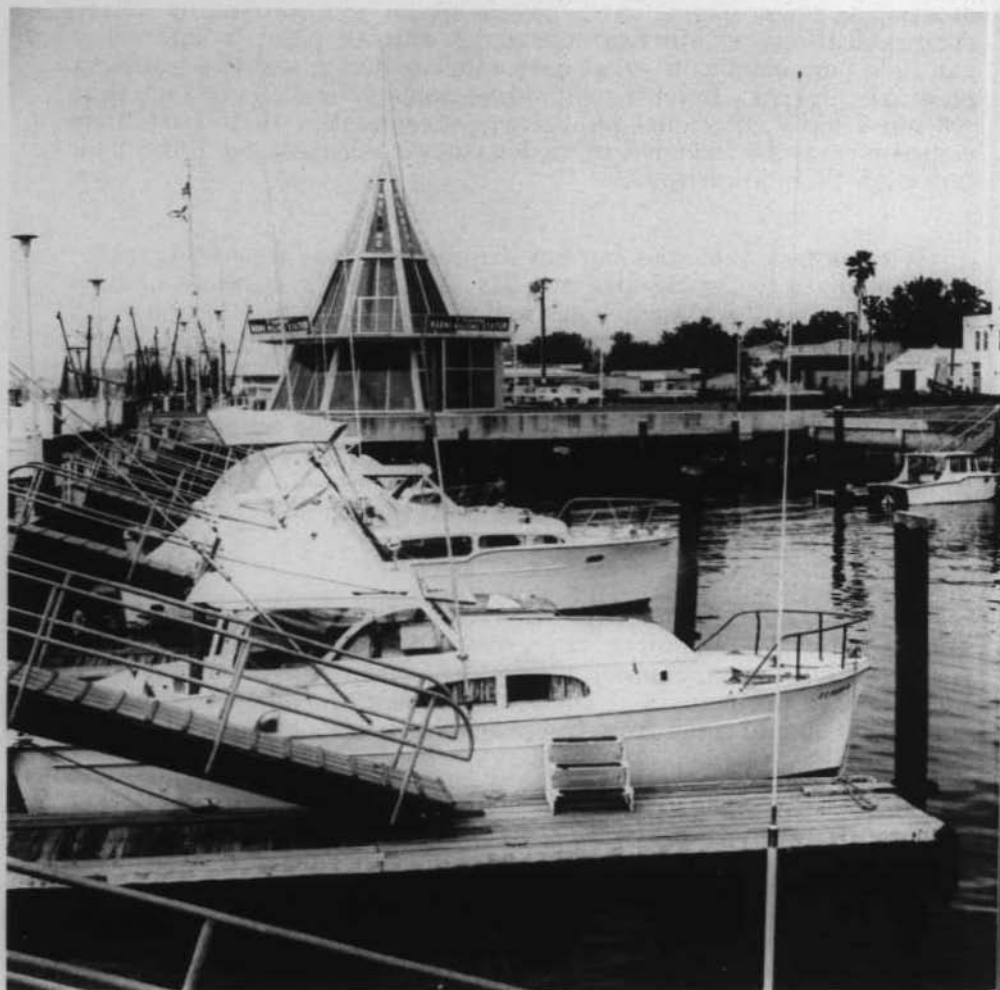
1. The education and knowledge of existing personnel
2. Methods of sampling and analyzing
3. Equipment—both field and laboratory
4. Yardsticks for measuring quality
5. Interpretation, storage and use of data

There is a strong need for improving public relations, in order to reveal the accomplishments brought about despite the shortages of resources. Better public relations would establish a uniform definition or interpretation of "pollution." There is a need for some sort of lobby to aid in the correction and improvement

of existing laws. The entire program would be improved by better communications within the bureau. A case in point is informing the field personnel as to what each other is doing, and the resulting accomplishments. Industry should be made aware of the fact that we must have additional publicity; consequently, their particular company may be included in various news releases, good and bad, but with their knowledge.

We suggest that the bureau acquire an "eagerness" to refer possible cases to Dr. Sowder and Mr. Andersen, regardless of how flimsy the basis for such legal action may be. Such "eagerness" will greatly reduce the administrative delays, and in most cases, indicate to the public and press that something has been done before the news media set up their crusading campaigns against the State Board of Health. We know of no case where criticism of the State Board of Health has been forthcoming due to the lack of success when something has been attempted. All criticisms have been because the State Board of Health has failed to try for correction or improvement.

We leave any comments pertaining to domestic waste problems and nutrification resulting therefrom to the people closely associated with these problems. Of course, we are involved with the nutrification problems, but the stimulation of research toward the correction should come from the people in Baker's discipline.



Yachts and ships are polluters when they allow sewage or oil to spill into Florida's waters.

APPENDIX D

Reports from county sanitary engineers

- (1) Report from Robert L. Quick, director, Engineering Division, Dade County Department of Public Health
- (2) Report from George T. Lohmeyer, director Sanitary Engineering, Broward County Health Department
- (3) a. Report from Frank L. Cross, Jr., sanitary engineer, Manatee County Health Department

Supplemental Reports from Manatee County

- (3) b. Report from Allen Kretschmar, director of Sanitation Division, Manatee County Health Department
- (3) c. Report from George Dame, M.D., director, Manatee County Health Department
- (4) Report from Donald W. Roberts, director, Sanitary Engineering, Hillsborough County Health Department
- (5) Report from Harold Leadbetter, sanitary engineer, Pinellas County Health Department
- (6) Report from Lawrence D. Lukin, director, Environmental Health, Palm Beach County Health Department

APPENDIX D - 1

TO: D. B. Lee, Director
Bureau of Sanitary Engineering
Florida State Board of Health

FROM: Robert L. Quick, Director
Engineering Division
Dade County Department of Public Health

Water pollution is a subject that has received a great deal of publicity over the past several months with news releases relative to the Federal water pollution control program and state and local problems. The question of "What is pollution?" is an interesting one.

Water pollution manifests itself through changes in water quality, ranging from gross to subtle. Various authorities have offered, either directly or by implication, definitions of water pollution with the words "contamination," "nuisance" and "degradation" frequently encountered. The words contamination, nuisance and degradation are useful words but we have enough trouble defining "pollution." However, when a body of water is suffering from pollution, it is certainly degraded, probably contaminated and possibly creating a nuisance. One thing the definitions have in common is they all refer to the impairment of water quality and to the resultant adverse effect on water uses.

The Dade County Health Department and Florida State Board of Health have worked very diligently over the past 16 years to prevent pollution and preserve the water resources for the protection of the health of the people. In 1950, there were only two or three small sewage treatment plants serving isolated areas with portions of the City of Miami sewered but discharging this waste water into Biscayne Bay and the rivers through seventy (70) sewer outfalls. It wasn't until 1954, after repeated surveys and warnings from the Health Department, that the citizens voted and approved a bond issue that would remove these sources of pollution. Also, since 1954, there have been some 75 sewage treatment plants constructed with sewage collection lines serving the adjoining areas. It is estimated that a permanent population of approximately 564,000 are served by public sewerage systems which represents about 46 percent of the population of Dade County.

The fact that the people of Dade County are now aware of the problem of pollution is due to efforts of the Health Department over many years and the recent action at the Federal level. As a result of these efforts, several municipalities and the county have applied for and received Federal grants to install sewerage collection systems and transmission mains that will be of great benefit in removing pollution in the areas served. It is, of course, true that we still have many difficult problems ahead before a unified sanitary sewerage and disposal system can be constructed to serve the Metropolitan Dade County area as the estimated cost of the first phase of the project envisioned to be completed before 1970 approximates \$100 million dollars. Thus, our day-to-day problem will be to halt the spread of water pollution in spite of the rapidly increasing industrial developments and population growth.

APPENDIX D - 2

September 11, 1966

David B. Lee, Director
Bureau of Sanitary Engineering
Florida State Board of Health
Jacksonville 1, Florida

Dear Mr. Lee:

This is written in reference to your recent memorandum called "Forthcoming Issue of Health Notes entitled 'Water Pollution.'" In this memo you requested an opinion from this department regarding the past, present and future situation on water pollution.

PAST—The writer has been with the Broward County Health Department since 1961. We feel that we may be in a better position than others to make evaluations on this topic inasmuch as we came into this regulatory field only a short time ago. While there is much to be done on water pollution control in the county we already feel, to paraphrase Winston Churchill, never was so much owed by so many to so few members of the Florida State Board of Health for combatting water pollution to the degree that has been obtained. In 1947 the population of Broward County stood at approximately 69,000; today, approximately 20 years later, our population exceeds 500,000 people. With this tremendous increase in population it is completely understandable that with our few staff members we do have potential problems on water pollution. By and large our main pollution threat comes from some 85,000 septic tanks in our county. Because of this, it is a matter of record that the coliform count in our tidal canals is higher than desired.

PRESENT—Today, the Engineering Section of the Broward County Health Department consists of seven individuals responsible for 1006 approved public swimming pools, 40 approved public water systems and some 65 approved public waste water systems. With this meager staff this department also maintains 20 air pollution dustfall stations in the county, maintains surveillance of the bacteria quality of our public bathing beaches and tidal canals and maintains a responsible surveillance of all sources of industrial waste and pollution including four municipal-type incinerators. Our staff members work with our public swimming pool operators, water and waste water plant operators, assisting in train-

ing lectures throughout the year. Also to be mentioned is the review of plans on public water supplies, public waste water systems, industrial waste, public swimming pools and septic tanks. Our staff members and our County Health Officer have worked and are working diligently among the governmental leaders of the county in encouraging the leadership to provide consolidated waste water and public water supply systems. It is a matter of record that Broward County is one of the few larger counties in the State of Florida which presently has sufficient incinerator capacity to handle all putrescible, municipal garbage.

In spite of the need for additional staff members, this department looks at the future with optimism and confidence. In combatting our major problem, the septic tank, enormous strides are underway which in five to ten years should startle pollution control experts. We point out the City of Ft. Lauderdale is moving into a master sanitary sewer program which will provide sanitary sewers for all of the 125,000 people in the city just as soon as the engineering and monies are available. The City of Hollywood is planning to construct a 10,000 ft. ocean outfall which will not only accommodate the present 87,000 people in Hollywood but also the present 18,000 people in the City of Hallandale. The City of Pompano Beach already possesses an ocean outfall which will accommodate not only the 27,000 people in Pompano but also all of the citizens who will live in the Pompano Beach Greater Reserve Area. Also, Broward County has moved into a county utility system aimed at consolidating water and sewer facilities for the citizens in our unincorporated areas.

It cannot be denied that in spite of the challenges listed above, Broward County is presently in an enviable position insofar as air and water pollution is concerned when the tragic situations in other parts of the country are viewed. It is the firm conviction of this department that the citizens of Broward County want to maintain and improve upon these environmental conditions with the support of the officials elected by the people in Broward County which we have received and which we feel certain can be expected in the future. Environmental health conditions in this area will improve as each year goes by.

Sincerely yours,

George T. Lohmeyer, P.E.
Director of Sanitary Engineering
Broward County Health Department

APPENDIX D - 3a

August 31, 1966

Manatee County Stream Pollution "Health Notes"

Mr. David B. Lee
Florida State Board of Health
Bureau of Sanitary Engineering
P. O. Box 210
Jacksonville, Florida

Dear Mr. Lee:

Reference is made to your memorandum dated August 24th, 1966 concerning the forthcoming issue of "Health Notes" entitled "Water Pollution."

As you know, past records of stream pollution would be hard for me to render, having been in Manatee County only since November of 1965. Prior to that time, Mr. Larsen headed up the sanitary engineering activities in this area on a regional basis. I would certainly be glad to comment on the present conditions of stream pollution activities in this county.

To start with, we have more than 70 sewage treatment plants, mostly package in nature, which have been badly neglected. Thus far we have inspected 10 of these units and have found all of them sadly lacking in maintenance and upkeep. We are also having difficulty obtaining operating reports from most of these facilities. We are in hopes that we can change this situation over a period of time and bring these plants into proper operation. The larger plants in this area, namely Bradenton and Palmetto, are generally working satisfactorily. In fact you will recall that the Palmetto plant received an award this year for its good operation.

Our activities at the present time include a new pollution control program in the county. A two story addition is being made at the Health Department; the downstairs section comprised of some 2000 square feet of floor space will be for administrative offices and the entire second floor, containing some 1900 square feet, will be a new pollution control laboratory. The staff for this Division presently consists of myself, Sanitary Engineer IV, a Stenographer II, an Engineering Aide I, and Engineering Aide II, a Chemist III, and a Laboratory Technician II.

With this new laboratory facility we should be able to do a considerable amount of stream pollution work along with the other projects involved in this area. We are currently working on the shellfish program, which would be directly related to stream pollution, and are trying to open up the Terra Ceia Bay area, both by shoreline survey and by bacteriological analysis. We are also routinely sampling Sarasota Bay.

We are also monitoring Ward Lake and the Braden River bi-weekly as a part of our stream pollution activities.

We have already established a pollution network for the county, consisting of some 12 stations, that will be monitored monthly after our laboratory goes into operation.

We are working very closely, at the present time, with the State Laboratory in connection with some fish kills that we have had of recent origin.

We have run two series of pesticides tests at low and high water flow, on the tributaries emptying into the new Manatee County water impoundment. Samples have been collected and analyzed from wells in the vicinity of the new Borden Complex, to determine the effect of Borden's gyp ponds on the underground water supply.

Samples have also been collected for background information from Bishop's Harbor to determine any possible effect of the discharge from the Borden Complex. Biological indicator jars are being collected and analyzed monthly in three locations in and around Piney Point.

We are enclosing a recent newspaper article and if you would like to use any of these pictures in the issue of "Health Notes," I am sure we can get the cooperation of the local papers to release these to you.

In regard to the future, I am sure that with the new facility and staff at our disposal that we will be able to monitor and control most of the future and existing problems in this area, given enough time to get functional.

If you need any more information or any more detailed information, please let me know.

Very truly yours,

Frank L. Cross, Jr.
Sanitary Engineer
Manatee County Health Department

APPENDIX D - 3b

Supplemental Report

September 2, 1966

Manatee County

The 1946 population of Manatee County was approximately 25,000. Major population centers, then as now, were the city of Bradenton with an estimated 10,000 and the city of Palmetto, estimated at 3300. There was only one sewage treatment facility in the county, a military installation constructed during World War II at the airport with a capacity of 15,600 gallons per day, however another military installation on Palma Sola Bay was never completed. There were three municipal sanitary sewer systems, all discharging untreated wastes into the Manatee River or Wares Creek. These served from one-half to two-thirds of the population of Palmetto and Bradenton, respectively, with the third at Ellenton. The Ellenton system was installed during Florida boom days when it was a municipality and went into a trusteeship after disincorporation in the thirties.

The first pollution survey recorded was of the Manatee River, conducted from September 1947 through January 1948, and the results published on August 24, 1948. Gross pollution was evident from the raw sewage discharge. This began an educational program which has been continuously carried on in an effort to abate all water pollution in the county. On July 30, 1948 the Bradenton city council passed a resolution to begin a master sewerage project including central treatment facilities. The first phase was approved by the Florida State Board of Health, September 9, 1948 on condition that the sewage treatment plant would be constructed within five years. This first phase resulted in removal of raw sewage from Wares Creek. Further pollution surveys of the Manatee River were conducted November 1951 through February 1952 and in 1953 from October through November. As a result, the city of Bradenton, on December 8, 1953, held a referendum for the purpose of providing sewage treatment facilities and sewer extensions to serve the entire area within its corporate limits. The sewage treatment plant resulting was placed in operation in the fall of 1955 (dedicated October 23), however prior to that date an additional pollution survey was made of the Manatee River to determine its condition as Bradenton had by then grown to approximately 14,000 persons. In the spring of 1956 a follow-up survey was made to determine the improvement after plant operation. This resulted in opening the south side of the river for recreational purposes. This survey also pointed up the need for the city of Palmetto to proceed towards removal of its pollution contribution of the river, and from that date assistance was directed towards

the need of sewage treatment facilities with adequate sewers for the city of Palmetto, having its referendum for such purpose on December 8, 1958. On August 28, 1960 plans were approved by Florida State Board of Health for 1.4 MGD secondary treatment plant with the related sewer extensions which would embrace the entire area within the corporate limits. This plant was put into service in the fall of 1961 with dedication on December 29.

The Manatee River was by now free of all major pollution. Route 301 highway construction through Ellenton in 1965 had destroyed a major portion of its sewerage system with individual septic tank installations following, removing its contribution through abandonment.

Manatee County now has a total of 87 sewage treatment facilities with treatment design capacities in excess of 6.8 MGD. These include the two municipal plants previously mentioned with total design capacity of 4.4 MGD, eleven subdivision systems with design capacity in excess of 1.5 MGD, the balance, in excess of 0.9 MGD, being for commercial establishments such as trailer parks, shopping centers, restaurants, et cetera. In addition there are eleven operating industrial waste water treatment facilities which serve one milk processing plant and the rest laundries. Through the construction of the waste water treatment facilities noted above, several sources of water pollution were corrected. This in addition to supplying facilities for the expanding population which would have, no doubt, contributed further to water pollution.

There are still water pollution problems in Manatee County, and probably always will be, as it appears that one of man's basic bad habits is to dispose of any and all types of waste by placing it in the nearest waterway. The present pollution factors at Holmes Beach it is believed will soon be eliminated as plans for Phase I of this sewerage system were approved November 9, 1965.

Continuing progress is being made in determining instances of pollution, locating the source and working towards abatement thereof. This is evidenced by present surveillance of Sarasota Bay, this area having been cleared for shellfish in 1965, and other programs presently being conducted on Wards Lake, Braden River, Bishops Harbor, Terra Ceia Bay, and the new Manatee River County Reservoir.

Allen Kretschmar, Director
Sanitation Division
Manatee County Health Department

APPENDIX D - 3c

Supplemental Report

Manatee County with 80,000 permanent population and 700 square miles is located on the Gulf of Mexico and Tampa Bay. Until the rapid growth which began during the middle fifties, water pollution was not a problem. There were no significant polluting industries. Half of the people lived in Bradenton and Palmetto which were served by adequate sewage facilities. The rural and suburban population were sufficiently scattered and few in number that their septic tanks and privies posed no problems.

In the past dozen years numerous trailer parks and subdivisions have appeared in the suburban area. At first the policy of the health department and county governing body was liberal in the approval of septic tanks and their number and density reached the point in the early sixties that approval was no longer freely granted and a stronger stand was taken for sewage treatment plants in new residential developments. The largest developments already were served by such systems. The standards previously reserved for large developments were applied to smaller and smaller developments, and the present policy is to restrict septic tanks to the situation for which they were always intended, isolated rural homes. The health department cannot, of course, follow its policy in every case at the practical, operational level.

Since 1959 there has been definite evidence of water pollution problems in streams, rivers, drainage ditches, private wells and bays, as evidenced by grossly visible pollution and also bacteriological surveys and reports. The causes of the pollution appear to be the density of septic tanks, septic tank failures, septic tanks connected to storm sewers or otherwise lacking drainfields, dairy manure and wastes, and, to a minor extent, industrial wastes. There have been several instances of pollution by small businesses such as laundries and, on a few occasions, by a very large citrus processing plant. There are at this writing no other large industries which have produced detectable pollution problems. At the present time a factory which will produce triple superphosphate is nearing completion and there is strong probability that an industrial complex will develop in the Port Manatee area near this plant.

Since 1939, water supply to the City of Bradenton has been the Braden River and there has been a good treatment plant. The City of Palmetto supplies treated water from deep wells. Otherwise, there is a very large number of private wells and 150 small to large privately owned water companies. Manatee County will soon open its water supply to all the suburban area. This water will be taken from an impoundment on the upper Manatee River

and will be treated. This new facility will greatly diminish private wells and water supply companies and decrease some of the hazards of water pollution.

Until November of 1965, Manatee County was served by a district sanitary engineer of the State Board of Health and he also served eight other counties. In November of 1965, the county employed a full time sanitary engineer and vigorously developed a full scale program to cope with air and water pollution. Other pollution control staff consists of a chemist, a laboratory technician, an engineering aide, a sanitarian, and a secretary. A pollution control laboratory will be operational by October 1. A special pollution control advisory committee appointed by the County Commission Board has been functioning for about a year. Special county enabling legislation for pollution control is being developed for introduction in the next Legislature. County health department personnel has increased from 14 in 1955 to 19 in 1960 and 42 in 1966. Sanitarians have increased from two in 1955 to five in 1960 and eight in 1966. Water pollution has never been a really serious problem in Manatee County due largely to relatively small size and lack of polluting industries. At this point, however, it is apparent that water pollution would definitely become a serious problem without controls. The Florida State Board of Health has provided vigorous extensive assistance to the Manatee County Health Department in dealing with all of the relatively minor problems transpiring in the past and also in establishing the present specialized pollution control program. The assistance has many times involved the State Health Officer, the legal staff, and especially the Bureau of Sanitary Engineering. In every case, the State Board of Health has promptly provided whatever and all help needed to solve all pollution problems which developed in Manatee County. This help was invariably effective in acute, more severe problems and, over the years, has staved off the worsening of water pollution.

After years of effort, only recently has the Board of Health convinced the public of the truly serious implications of the pollution problem and not even yet has the Legislature found sufficient funds to operate the kind of effective program the public now demands. To create a new state agency to control pollution rather than to finally provide the Board of Health with sufficient financial support seems political rather than expedient particularly as such action will have the effect of ignoring an excellent, functioning administrative system and ignoring years of sound experience and ignoring scores of well trained specialists in the field. Let us pass sufficient laws and provide sufficient monies and let the Board of Health continue to do a good job.

George M. Dane, M.D.
Director
Manatee County Health Department

APPENDIX D - 4

September 8, 1966

Re: Water Pollution
General

Mr. David B. Lee, Director
Bureau of Sanitary Engineering
Florida State Board of Health
P. O. Box 210
Jacksonville, Florida 32201

Dear Mr. Lee:

This is in reference to your memorandum of August 24, 1966 requesting an opinion from this office relative to the status of our water pollution control program and specifically to the progress which has been made during the 20 year period 1947-67.

I have given careful consideration to this matter and feel that significant progress has been made in this county. Recognizing that this information will be used in a forthcoming issue of Health Notes, I have chosen to highlight several of what I consider to be the more dramatic developments.

The first of these is the development of central sewerage systems. In 1946 Hillsborough County had no approved central systems; today 296,085 people are served by approved municipal or private systems. In 1946 there were no approved waste treatment plants in Hillsborough County; today we have 97 such plants.

There are three incorporated municipalities in Hillsborough County—Tampa, Temple Terrace and Plant City. In Tampa approximately 85 per cent of the population is served by the sewerage system; in Temple Terrace approximately 95 per cent, and in Plant City, approximately 80 per cent.

Modern waste treatment for our public schools is another accomplishment in Hillsborough County in which we take great pride. We have approximately 100,000 students who attend 127 schools. Of these 127 schools, all except 12 are either on sanitary sewers or have their own approved aerobic sewage treatment plants. Several of the 12 remaining schools on septic tanks will be provided with sewage treatment plans in the very near future. A review of

the correspondence will reveal that the Division of Waste Water, along with our department, played a great part in convincing the School Board to provide sewage treatment plants rather than septic tanks.

We expect this trend toward central sewerage facilities to accelerate rapidly during the next few years. The Hillsborough County Board of County Commissioners are at this time making firm plans to provide central water and sewerage facilities to the unincorporated areas of the county.

The second item of special interest is the progress which has been made by the Lykes Brothers Meat Processing Company. In 1946 the Lykes Brothers Tampa plant dumped all of its waste untreated into the Palm River at a point near its entrance into McKay Bay. The result was gross pollution. Several years ago the Lykes plant was connected to the City of Tampa system and this extremely acute problem alleviated. Lykes Brothers has recently completed another meat packing plant near Plant City. This outstanding facility is said to be the largest of its type south of Chicago and the most modern in the world. The waste treatment plant which was constructed to serve this facility is of the most modern design and utilizes the latest technological advances in waste treatment methods. The cost is approximately \$300,000. In my opinion this is dramatic progress.

I hope the above information will be of help in the preparation of the forthcoming issue of Health Notes. If I can be of further assistance, please call on me.

Yours very truly,

Donald W. Rogers, P.E.
Director of Sanitary Engineering
Hillsborough County Health Department

APPENDIX D - 5

September 21, 1966

Mr. David B. Lee, Director
Bureau of Sanitary Engineering
State Board of Health
P. O. Box 210
Jacksonville, Florida 32201

Dear Mr. Lee:

The following is a report of the progress of Pinellas from 1947 to 1966. Emphasis is placed on growth of public water supplies and municipal type sewage treatment facilities.

Approximately 90% of the population of 430,000 has access to sewer systems and public water supplies.

A high quality of leadership, conscious of the needs for clean water, was necessary in order to maintain the recreational waters bordering Pinellas County.

There is little doubt that within the past 14 years Mr. William E. Dunn has assumed a major role in the leadership of water quality control. Mr. Dunn worked 12 years in Pinellas County as director of the Environmental Health Program and was dedicated to the establishment of sewer systems and public water supplies. His most recent endeavors, the establishment of county-operated sanitary districts, has caused him to leave the County Health Department and assume the operation of the sanitary districts as well as continue to establish new districts. Without his efforts in Pinellas County, or without the efforts of an equally dedicated Health Department employee, the county would probably have fallen far short of goals which it has attained today.

Very truly yours,
Harold Leadbetter
Sanitary Engineer
Pinellas County Health Department

RCG/wl
Attachments

The facts in this report are extracted from a 20-page report submitted to the director of the Bureau of Sanitary Engineering by the sanitary engineer of Pinellas County Health Department.

Tierra Verde

This island community is served by two Marolf aeration plants of 30,000 gallons per day. Plans call for a three-phase expansion program of the sewage treatment plant which would have 100,000 GPD for each phase.

Fort DeSota Park

This county park is served by five aeration plants throughout the park which is completely sewered. Two of the plants are due for expansion.

GULF BEACHES

St. Petersburg Beach

Twenty years ago the area was served by septic tanks. The first sewer lines and primary sewage treatment plant was installed in 1959 with 1.8 MGD design flow. In 1966, a secondary treatment plant was put into full use which is designed for a peak flow of 3.33 MGD. A total of 100 per cent of the platted area is served by the treatment plant known as Long Key Sewer District. This district was taken over by the St. Petersburg Beach in November 1966.

Treasure Island

Septic tanks served this city until sewer lines and sewage treatment facilities were installed in 1950. The treatment plant was expanded in 1956-57 and again in 1964 and converted to a contact stabilization sewage treatment plant. The present capacity is 2.2 MGD.

Madeira Beach

In 1947 the area was unsewered but a primary sewage treatment plant was constructed in 1952. It was redesigned and enlarged in 1959 to 2.2 MGD with a 27 per cent BOD removal. At the present time, the city engineers are preparing a feasibility study on their sewage treatment facilities and may recommend consolidation with another sanitary district.

Indian Rock Beach, South Shore

This area was served by septic tanks until a Hi-Cone activated sludge sewage treatment plant was put into operation in 1959. At this time the entire platted city was sewered. In 1966, this sewage treatment plant is operating at approximately 10 per cent of design capacity.

Indian Rock Beach

This area is sewerred by the McKay Creek Sanitary District. Prior to 1966 it was on septic tanks.

Belleair Beach and Belleair Shores

The area is unsewerred but applications have been made for federal money to finance sewers.

PINELLAS PARK

In 1947, the area was served by septic tanks. The first sewer lines were laid in 1957 with four lift stations to pump sewage to a plant. In 1960, a conventional activated sludge sewage treatment plant of 1.0 MGD design flow was completed. In 1963 the sewage treatment plant was enlarged and additional sewers and lift stations added. Further expansion is planned by 1970.

ST. PETERSBURG

In 1947, the city had no sewage treatment. However, sewers were located in the downtown area which emptied into Tampa Bay after screening and chlorination. The first treatment plant was completed in 1954 and about 25 per cent of the city sewerred. Three more primary treatment plants were added in 1956 and 1957 with approximately 50 per cent of the city sewerred. In 1965-66, two of the sewage treatment plants were converted to modified activated sludge and the design capacity enlarged. All of the platted areas within the city are sewerred. This is a part of a capital improvement program which includes storm drains, paving streets, lighting, widening streets, larger water and sewer trunk lines and beautification.

County Sewer Districts

Pinellas County has completed or in the process of constructing seven sanitary districts which will serve about 82,600 persons with at least three sewage treatment plants and a capital outlay of \$13,370,000 (for six districts) plus money acquired from general funds. The South Cross Bayou Sanitary District will have a 5 MGD design capacity plant which will serve the Pinellas County (Kenneth City), Boca Ciega, and Jungle Terrace Sanitary Districts; McKay Creek Sanitary District plant will have 800,000 gallons per day capacity and the Pinellas County Sewer System (Virginia Groves) will have a 100,000 gallons per day plant. A privately-owned sewage treatment plant is also operated in the Boca Ciega Sanitary District by the Bay Pines Estates.

LARGO

In 1947, Largo was served by a septic tank and sewers in the downtown area. The first sewer lines were laid in 1925. The first primary sewage treatment plant was completed in 1954 and the city was 50 per cent sewerred. The present plant of 1.5 MGD design flow was completed in 1962. The Newport Sewage Treatment plant was purchased in 1966 by the city and with mechanical renovation it will be tied into a master lift station. It is estimated that by 1968 all of the recently annexed areas will be sewerred. Further plant expansion will be necessary by 1970.

BELLEAIR

In 1961-62, Belleair constructed a modern Chicago Pump-Hi-Cone Aeration Plant of 0.5 MGD design capacity at an estimated cost of \$1.25 million.

CLEARWATER

In 1947, the city had municipal septic tanks and one primary treatment plant which was built in 1939. In 1966, Clearwater is served by three extended aeration plants with a total design flow of 6.5 MGD. A total capital outlay of \$17.5 million has been spent in the past 20 years and one plant is being expanded from a million gallons flow per day to 5.0 MGD at a cost of \$1.845 million.

SAFETY HARBOR

In 1947 the city was on municipal septic tanks with 50 per cent of the city sewerred. In 1955, Safety Harbor constructed a Spirahoff Treatment plant and in 1962 the municipality built a secondary trickling filter plant with a 0.35 MGD design flow.

DUNEDIN

In 1947, Dunedin was served by municipal septic tanks and 35 per cent of the city was sewerred. A primary sewage treatment plant was built in 1957 and 95 per cent of the city was on sewers. By 1966, the primary sewage treatment plant had been expanded to 3 MGD peak flow with a digester and clarifier added. In the immediate future, the city plans to expand the primary sewage treatment plant to a secondary plant, construct a permanent extended aeration plant and install more interceptors and lift stations.

TARPON SPRINGS

The city was served by three 15,000 gallons municipal septic tanks in 1947 and 50 per cent of the city was on sewers. The first primary sewage treatment plant was built in 1951 and at that time the city was 95 per cent sewered. A 1960 feasibility study of sewage treatment has never been augmented but a budget request for another study was due to go before the City Council late in 1966.

OLDSMAR

In 1964, the city purchased the existing sewage treatment plant from County Club Estates for \$90,000 and floated a bond issue to pay off old water bonds and finance a modern secondary sewage treatment plant, sewer lines and lift stations at a cost of \$512,000. The city has also received a federal grant of \$141,000 as an aid in pollution control.

Stream Pollution

A minimum of three surveys are made annually of five streams, three major lakes, several small lakes, and eight bays and bayous. Dissolved oxygen, salinities or bacteriological analyses are made during each survey. St. Joseph's Sound and Mullet Key areas receive 15 complete samplings during 1966.

Industrial Wastes

Industrial waste has not been a large problem in Pinellas County. Communities have developed by the influx of retired families and tourist trade. Unlike Tampa, which relies heavily upon industry, St. Petersburg and the other cities in Pinellas County have remained mostly residential in nature.

Light industry is present and plating wastes from small plating companies is the major source of industrial waste. A recent move to raise the standard of the effluent emitted by these sources has been put into effect with the assistance and guidance of the Division of Industrial Waste, Florida State Board of Health.

APPENDIX D - 6

September 20, 1966

TO: David B. Lee, P. E., Director
Bureau of Sanitary Engineering
Florida State Board of Health

FROM: Lawrence D. Lukin, P. E.
Director of Environmental Health

SUBJECT: Palm Beach County
Stream Pollution

This report is aimed at reflecting the progress made in the last two decades toward abatement of water pollution in Palm Beach County. We should bear in mind that a direct comparison using the identical parameters would naturally mislead in the interpretation of end results. Twenty years ago the indexes of pollution and the uses of water were appreciably different than they were 40 years ago, and more so 60 years ago and so on. A measure of progress then should be based not only on the engineer's indexes of the 1940's but also by the changing environmental demands of the 1960's.

We can capsule the changing abatement criteria into two major categories:

- A. The indexes of measurement of pollution.
- B. The degree of tolerable pollution.

A. The Indexes:

The engineer has selected his yardstick wisely in M.P.N.'s, D.O.'s, B.O.D's, etc. in that the collection of samples, laboratory work and interpretation of results are simple and inexpensive. The coliform organism count has had universal acceptance as an association with pathogens on the basis of "Guilt by Association."

New acquaintances to the engineer, namely the ecologist, pathobiologist, and microbiologist have suggested the need for more specific indexes of pollution. The ecologist points out the more reliable index of pollution is the biomass that lives in the streams or bodies of water. Changes in the ecological system are more sensitive measures of pollution compared to the grab samples favored by the engineer. The fish, crustacea, plankton, etc. are continuous samplers of the water quality.

We should also ask:

Is the potential of transmission of disease limited to the bacteriological concentrations? Only recently has suspicion of the microbacteria become implicated in transmission via the water route. The survival of the viruses after destruction of the coliforms challenges the current indexes of pollution.

B. The Degree of Tolerable Pollution

What degree of treatment and subsequent pollution load on a stream represents adequate protection to the broad environment? The answer to this question reaches beyond the public health aspects of the human animal. We are confronted more and more each year with the demands of the conservation people and the game and fresh water fish interests. If we agree to recognize the aims of these groups, then our current standards of tolerable pollution will have to be upgraded.

Progress in Water Pollution in Palm Beach County is best measured by classifying the many areas of activity and weighing them on their individual balances rather than the program as a whole. Below is a categoric comparison showing progress in three degrees of accomplishment in the last 20 years.

I. Areas of Significant Progress

- A. Extension of municipal sewage treatment.
- B. Upgrading of new and existing treatment facilities to tertiary treatment or ocean outfall systems.

II. Areas of Minor Progress

- A. Subdivision curtailment on septic tank systems.
- B. Industrial waste discharges.

III. Areas of Stagnancy or Digression

- A. County-wide planning.
- B. Expansion of staff and personnel to meet the growing environment.
- C. Legal assistance on a county level.
- D. Upgrading of privately owned sewerage facilities.

APPENDIX E

"Health Aspects of Water Pollution"
from Weekly Compilation of Presidential Documents, Monday, September 5, 1966, Vol. 2, No. 35. pp. 1155-1205.

HEALTH ASPECTS OF WATER POLLUTION CONTROL

Interdepartmental Agreement Concerning Consultation Between Departments of Health, Education, and Welfare and the Interior. September 2, 1966

1. This Interdepartmental Agreement has been developed in accordance with the provisions of Section 1(f) of Reorganization Plan No. 2 of 1966, which states:

"The functions of the Surgeon General under Section 2(k) of the Water Quality Act of 1965 (79 Stat. 905) are transferred to the Secretary of Health, Education, and Welfare. Within 90 days after this reorganization plan becomes effective, the Secretary of the Interior and the Secretary of Health, Education, and Welfare shall present to the President for his approval and interdepartmental agreement providing in detail for the implementation of the consultations provided for by said Section 2(k). Such interdepartmental agreement may be modified from time to time by the two Secretaries with the approval of the President."

2. The functions referred to above are defined by Section 2(k) of the Water Quality Act of 1965, as follows:

"The Surgeon General shall be consulted by the head of the Administration on the public health aspects relating to water pollution over which the head of such Administration has administrative responsibility."

3. The public health aspects of water pollution relate to man's drinking water; to his contact with water in recreation and work; to the contamination of food sources, particularly shellfish; and to the breeding of specific insect vectors of disease. The health threat is of three types; (a) chemical—both organic and inorganic contaminants, which can result in acute toxic or long-term chronic effects on humans; (b) biological—microbiological contaminants and insect vectors associated with spread of communicable disease; and (c) radiological—radioactive contaminants which in very low level concentrations may produce radiation damage in humans.

4. Consultation between the Departments of Health, Education, and Welfare and the Interior under the terms of this Agreement shall be based upon the following general concept:

(a) The Department of the Interior is responsible for administering the Federal Water Pollution Control Act as amended;

certain functions relating to water pollution control under Section 702(a) of the Housing and Urban Development Act of 1965, Section 212 of the Appalachian Regional Development Act of 1965, and Section 106 of the Public Works and Economic Development Act of 1965, and Executive Order 11288, "Prevention, Control, and Abatement of Water Pollution by Federal Activities."

The stated purpose of the Federal Water Pollution Control Act is "to enhance the quality and value of the nation's water resources and to establish a national policy for the prevention, control, and abatement of water pollution." The responsibilities of the Department of the Interior, under the above legislation and Executive Order, involve the prevention and control of water pollution in consequence of the benefits resulting to the public health and welfare, giving due regard to the improvements which are necessary to conserve the nation's waters for public water supplies, propagation of fish and aquatic life and wildlife, recreational purposes, and agricultural, industrial, and other legitimate uses. To meet these responsibilities the Department of the Interior, through the Federal Water Pollution Control Administration, conducts programs to identify and measure the extent of pollution and its effects on water uses and to assure the treatment and control of waterborne wastes.

(b) The Department of Health, Education, and Welfare, under the Public Health Service Act as amended, is responsible for the protection of the public health. Within this responsibility, the Department through the Public Health Service is, therefore, concerned with the causes, diagnosis, treatment, control and prevention of physical and mental diseases and impairments of man. As related to Reorganization Plan No. 2, these responsibilities include: determination of the health significance of water pollution; investigation of waterborne diseases and means for their control; provision of consultation to the Department of the Interior on the public health aspects of water pollution; and advising on the public health questions involved in the inclusion of storage for water quality control in Federal reservoirs.

5. Under the terms of this Interdepartmental Agreement the Department of Health, Education, and Welfare will provide advice to the Department of the Interior as follows:

(a) Recommendations on criteria for water quality standard setting based on health aspects of intended water use for drinking

water supplies, shellfish and other marine food production, bathing, and other water contact activities. Recommendations will be provided and modified as new supporting data are developed.

(b) Upon request, consultation and technical assistance on specific water-related health problems, as these may arise in connection with water pollution control activities, such as comprehensive pollution control program, enforcement actions, control of pollution from Federal installations, water pollution research projects, construction grants, and the study of water pollution from vessel operations. In cases where epidemiological surveillance activities indicate that a probable public health hazard exists, the Public Health Service will initiate appropriate action to advise the Federal Water Pollution Control Administration.

(c) Review and comment on construction grant applications and on requirements for control of pollution from Federal installations for specific projects whose operation may adversely affect the sanitation of shellfish-growing waters. The Federal Water Pollution Control Administration will refer all such projects to the Public Health Service for review and comment.

6. Section 1(e) of Reorganization Plan No. 2 of 1966 provides for the Department of Health, Education, and Welfare to advise on public health questions involved in determinations by Federal agencies of the need for and value of the inclusion of storage for water quality control in Federal reservoirs. Advice on the effects of streamflow regulation on public health will be provided by the Public Health Service based upon the studies prepared by the Federal Water Pollution Control Administration under Section 3(b) of the Federal Water Pollution Control Act. The Federal Water Pollution Control Administration report will be provided to the Public Health Service for review and comment. The Public Health Service comments, together with its own report on the production of disease transmitting insects and other environmental health considerations in the project area, will be submitted to the Federal construction agency concerned.

7. To assure an adequate basis for such advice and consultation to the Department of the Interior, the Department of Health, Education, and Welfare will, through the Public Health Service, conduct the following kinds of studies on the health aspects of water pollution:

(a) Epidemiological, microbiological, radiological, and toxicological research and investigations into the human health signifi-

cance of waterborne contaminants, to determine health tolerance for such contaminants as they affect drinking water supplies, shellfish and other marine foods production, and water contact activities.

(b) Epidemiological surveillance of the incidence of waterborne disease based on disease reporting, and on health-related water quality data derived from the Public Health Service drinking water quality network established under the Interstate Quarantine Regulations, the National Shellfish Sanitation Program, and the Radiation Surveillance Center, and on data from the program activities of the Federal Water Pollution Control Administration.

Investigation of waterborne disease outbreaks will be conducted in cooperation with State and local health departments. Data and participation will be requested from the Federal Water Pollution Control Administration when water pollution is involved in the outbreak. Reports based on these investigations which identify pollution that presents a danger to health will be referred to the Federal Water Pollution Control Administration for appropriate action.

(c) Studies of the relationship of surface water characteristics to the production of disease vectors such as disease-transmitting insects, snails, and protozoa.

(d) Development of techniques for the identification, measurement and study of the behavior of waterborne contaminants which cause or influence disease, such as viruses, bacteria, organic chemicals, and trace elements. The results of these Public Health Service studies will be made available to the Federal Water Pollution Control Administration as a complement to its studies on identification and measurement of water pollutants, the results of which in turn will be made available to the Public Health Service.

Study of methods of removing contaminants of health significance to meet human tolerance levels as related to drinking water, swimming pools, shellfish depuration, and food processing. To avoid duplication of Federal installations for pilot plants, when such facilities are required to study methods of removing contaminants from drinking water, Public Health Service personnel may use Department of the Interior facilities. To assure that such installations will adequately serve such purposes, the Department of the Interior shall consult with the Department of Health, Education, and Welfare in their design.

Study of the human health relationship of waterborne contaminants to animals and plants used as sources of foods, such as shellfish and other marine foods, food crops irrigated with polluted water, including their field packaging, and use of sewage sludge as a fertilizer and soil conditioner.

8. The Public Health Service and the Federal Water Pollution Control Administration will exchange on a regular basis relevant health-related water quality data and research results. Particular attention will be given to prompt exchange of significant new findings which would affect the program responsibilities of either agency.

9. To effect essential coordination between Public Health Service and the Federal Water Pollution Control Administration, and to insure fulfillment of this agreement, each agency will designate an official liaison representative. These representatives, together with appropriate staff, shall meet at the request of either agency to discuss measures taken to implement this agreement and review any evident or emerging technical, administrative or fiscal problems which either agency considers might affect the proper functioning of this agreement. Any unresolved problems will be brought to the attention of the respective Secretaries.

John W. Gardner
Secretary of Health, Education, and Welfare
August 8, 1966

Stewart L. Udall
Secretary of the Interior
August 8, 1966

Lyndon B. Johnson
The President
September 1, 1966

APPENDIX F

- (1) Letter from Wilson T. Sowder, M.D., Florida State Health Officer, to H. B. Cottrell, M.D., Regional Health Director, U. S. Public Health Service, Region IV, Atlanta, Georgia.
- (2) Letter from Howard W. Chapman, associate regional health director, for Environmental Health Service, U. S. Public Health Service, Region IV, Atlanta, Georgia, to Wilson T. Sowder, M.D., Florida State Health Officer.

APPENDIX F (1)

August 12, 1966

H. B. Cottrell, M.D.
Regional Health Director
U. S. Public Health Service—Region IV
50 Seventh St., N.E.
Atlanta, Georgia 30323

ATTENTION: Mr. Howard Chapman

Dear Doctor Cottrell:

Enclosed is a copy of a recent memo of mine concerning the Florida State Board of Health's interest in an improved public information program, especially on air and water pollution control programs. I am bringing this to your attention because I think it would be helpful to the Florida State Board of Health to obtain your thoughts and assistance on this matter.

In particular, I would like to request a very brief report comparing Florida pollution problems and control programs to other states in your region or perhaps to the rest of the country. If you can meet this request, I think you would satisfy our needs by limiting your response to an evaluation and comments on materials, information, and impressions you already have on hand. I know this may restrict you to making only general observations; however, I do not believe our situation or public information purposes warrant anything more than that at this time. Your permission to publicly quote any of the comments you may be able to send will be appreciated.

Sincerely,
Wilson T. Sowder, M.D.
State Health Officer

WTS:mw
Enc.

APPENDIX F (2)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE Regional Office PUBLIC HEALTH SERVICE

Rm. 404, 50 Seventh Street, N.E.
Atlanta, Georgia 30323

September 6, 1966

Dr. Wilson T. Sowder
State Health Officer
State Board of Health
Jacksonville, Florida 32201

Dear Dr. Sowder:

This is in regard to your letter of August 12 to Dr. Cottrell, requesting a brief report on Florida's water and air pollution problems and control program. Enclosed with your letter was a copy of your July 28 memorandum to County Health Officers, etc. on "Information Program and Legislative and Budgetary Proposals on Air and Water Pollution Control Programs", and a copy of the proposed act "State Environmental Control Act."

To comply with your request it is necessary to treat air and water pollution separately, as follows:

Water Pollution

In general, the Florida State Board of Health has done an excellent job in obtaining treatment of wastes from municipalities. The statistics on the number of municipal waste treatment plants built in the State of Florida during the last few years are, indeed, most impressive. During the period 1961 through 1965, 1003 separate treatment plants were approved for construction. No State within this Region, and only a few nationally, have had the rate of population growth and urban expansion, with its accompanying municipal waste problem, as has Florida.

The State Board of Health has carried out some extensive studies on special local water pollution problems such as those associated with the phosphate industry. These studies are commendable, but staff resources should be available to cover all industrial wastes and stream problems in the State.

One of the real glaring weaknesses in Florida is State law which exempts certain industrial areas from pollution control. No

State in the Southeast has similar exemptions in its law. Also, as in other States, Florida has serious pollution problems relating to the larger municipalities such as Jacksonville and Miami.

In the "Staffing and Budgetary Guidelines for State Water Pollution Control Agencies," prepared by the Public Administrative Services, Chicago, Illinois, (see enclosed copy) it is suggested that Florida have a minimum staff of 58 persons, but a staff of 93 persons for its water pollution control program would be more desirable. To support this staff a minimum annual budget of \$528,000 would be required, and a desirable budget of \$847,000. Florida's present staff and budget is less than one-half of the minimum recommended.

The Florida State Board of Health has an effective water pollution control program which has done much to control or minimize pollution in the State. However, to cope with the pollution problems associated with population growth, urban and industrial expansion, etc., the following is needed:

1. Strong legislation providing all the authority needed to do a complete job.
2. Adequate budget and staff.
3. Initiate long-range planning for water pollution control which includes a comprehensive approach for stream studies and abatement of pollution from all municipalities and industries.

Air Pollution

Based on 1965 data, the Florida State Board of Health spent approximately \$176,000 for air pollution activities or approximately 3.5 cents per capita per year. The average in 35 States during the same year was 4 cents. However, this comparison of Florida with other States is somewhat misleading since approximately \$146,000 of the \$176,000 was spent in the Polk-Hillsborough-District, leaving only \$30,000 for the remainder of the State. Therefore, the per capita per year expenditure in the Polk-Hillsborough District was about 23.4 cents, and the remainder of the State 0.6 cents. If the Polk-Hillsborough District is considered a "local" program, the expenditure of 23.4 cents per capita compares favorably with the 1965 average of 22.6 cents for 130 local programs. Obviously, the 0.6 cents per capita for the State's activities is much below the national average of 4 cents. In general, a comprehensive State air pollution program that includes studies, technical assistance to local programs, plan review and approval, and enforcement authority should have a minimum budget of from 2-5 cents per capita per year.

Unquestionably, the State program and activities in the Polk-Hillsborough District have effectively reduced air pollution emissions in this area. This has been accomplished even though there has been a tremendous expansion of the phosphate rock processing industry within the last eight years. It is generally agreed, however, that the air pollution problems are not completely resolved and much additional effort is needed. The Florida State Board of Health is fortunate in having on its staff engineers who are nationally recognized for their expertness in the field of air pollution control from phosphate rock processing operations.

I would like to comment briefly on the proposal for \$1,000,000 in grants for local air and water pollution control programs, as well as the proposal to shift \$500,000 from the State program to the local program—providing, in all, \$1,500,000 for local activities.

State grants to the more populated Counties, or to Counties that have special or unusual problems, may be appropriate and should be productive. According to the 1960 census, there were 11 Counties in the State with populations in excess of 100,000 and 10 with between 50,000 and 100,000. It is doubtful that Counties with less than 50,000 population would have the resources, interest, or variety of staff to mount a successful program in either the water or air area. I would, therefore, suggest that if grants are to be made to County health departments that specific criteria or guidelines be developed and followed which would exclude grants to Counties where it is doubtful a meaningful program could be established, and where it is evident that the State could provide the services better and more economically.

In addition, it is imperative to have a clear understanding of the State and County health department roles. The local program should supplement and complement the State's program. The State program should continue to have the responsibility for laboratory services, setting of standards, provision of expert technical services, comprehensive long-range planning and enforcement.

Sincerely yours,

Howard W. Chapman
Associate Regional Health Director
for Environmental Health Services

WHAT ARE WATER POLLUTANTS?

Sewage

Infectious organisms

Plant nutrients—nitrogen and phosphate fertilizers

Organic chemicals exotics — detergents, insecticides, pesticides, herbicides, DDT, 100 synthetic organic insecticides, inorganic pesticides

Mineral and chemical substances—salts and acids

Soil sediments

Radioactive substances

Heat

WHO OR WHAT ARE WATER POLLUTERS?

Air Force bases

Airlines

Army bases

Banks

Beauty and barber shops

Bootleggers

Bus stations

Chemical plants

Churches

Citrus growers

Commercial ships

Dairy farmers

Distilleries

Electrical generating stations

Garages

Golf courses

Homeowners

Hospitals

Indian villages

Industrial plants

Insurance offices

Lumberyards

Motor boats

Muck farmers

Naval vessels and installations

Paper and pulp mills

Phosphate mining and processing plants

Railroad trains

Rendering plants

Restaurants

Schools, colleges and universities

Septic tanks

Sewage treatment plants

Slaughterhouses

Soft drink bottlers

State office buildings

State hospitals and institutions

Stores

Swimmers

Well drillers

Zoos

THESE ARE ONLY A FEW OF THE
POLLUTERS BUT THE LIST IN-
CLUDES . . .

Everybody

People fish and water ski on Duval County's Cedar Creek despite the fact that it is polluted.



FLORIDA HEALTH NOTES



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VOLUME 59 — NO. 2

FEBRUARY 1967

The Fight For
CLEAN AIR

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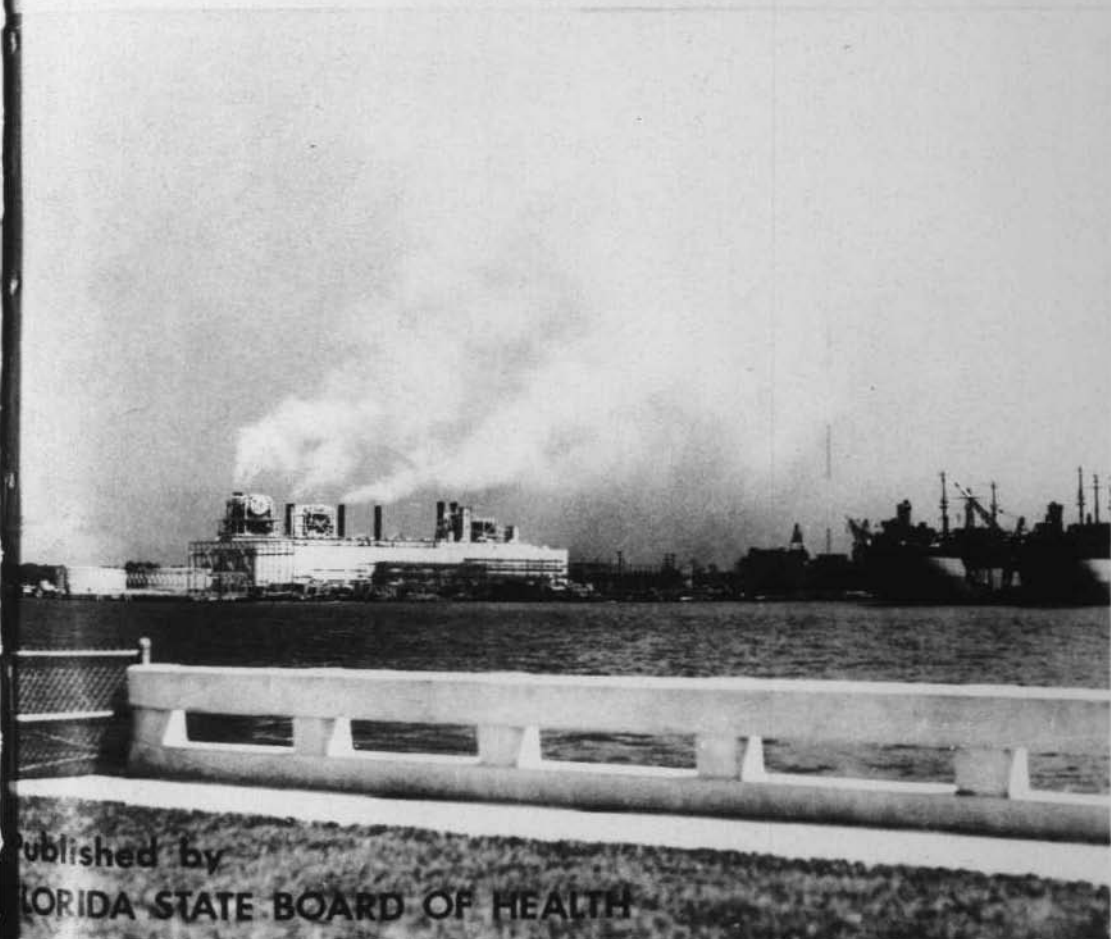
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The Fight For Clean Air

Have you ever breathed pure air in your life? That's right, have you? There has always been some pollution, even in nature, but today's public health and government officials, plus millions of Americans, are concerned about the amount of dirt escaping into the air we breathe. When the amount of this matter in the atmosphere interferes with your comfort, safety, health or the full use and enjoyment of your property, it is called **air pollution**.

Some examples of air pollution which have turned up as complaints with the State Board of Health during one six-month period were:¹

- * paint damage from particulate deposits originating from a utilities plant
- * dust and smoke from a tung mill
- * dust fumigation from a nearby pulp mill.
- * dense smoke from a laundry before it switched from fuel oil to natural gas
- * annoying odors from a chemical plant
- * deterioration of sheet metal roof from hydrogen sulfide
- * air pollution from a sandblasting operation
- * creosote odors from a lumber and wood treating company
- * dust and odors from an asphalt plant
- * airborne particulate matter from a fertilizer plant

There have been innumerable complaints concerning damage to livestock, citrus groves, ornamental plants, flowers, and automobile paint.

Air pollution is becoming a problem. As the population grows and more people are born in and migrate to the cities, the air pollution threat can only grow more acute. Some experts agree with, but view as extreme, the statement by Los Angeles meteor-

1. "Statewide Air Pollution Investigations since January 1962." *Addenda to minutes of Florida Air Pollution Control Commission, Lakeland, Florida, June 29, 1962.*



Not only Florida's tropical flora, but its clean air are an attraction to millions of tourists.

ologist Morris Neiburger: "All civilization will pass away, not from a sudden cataclysm like a nuclear war, but from gradual suffocation in its own wastes."²

Everyone is affected by air pollution. A normal person can

2. Berland, Theodore. "Our Dirty Sky." *Today's Health*, Vol. 44, No. 3, March 1966. pp. 40-42.

live on four and a half pounds of water a day; he needs two pounds of food daily; but he needs 30 pounds of air. Since breathing is a natural bodily function, he cannot be selective about the air he breathes as he can about the food and water he consumes.

Air pollution affects your health. Because no one can experiment on humans and because everyone is exposed to polluted air, there can be no rigid scientific proof to pinpoint the exact effects of dirty air on our health. Specific pollutants have been found in the blood and certain organs of people breathing dirty air. Some of these chemicals are known to irritate the respiratory system, to inhibit the wave-like cleansing motions of its tiny "hairs" called cilia.

Air pollution can affect people's aesthetic tastes. It can dim the sunshine, shut out the view of distant objects, and leave its mark on buildings and vegetation. It can also be dangerous when it cuts down the vision of automobile drivers and airline pilots.

The typical reactions of humans to air pollution are watering eyes, sniffly noses, sore throats and coughs. This is how it affects normal people. For those who have asthma, emphysema, bronchitis or some other chronic respiratory illness, a rise in today's air pollution level can make these people cough, gag, pant and suffer chest tightness.

The chances of a man between the ages of 50 and 70 dying of such lung diseases as emphysema, bronchitis and asthma are twice as great if he lives in an air-polluted area compared to living in a clean-air area.³

Air pollution also affects the financial well-being of people by destroying land values; it dirties clothes, making laundering and the purchasing of new clothing more necessary; it adds to the cost of telephone and electricity because pollutants corrode electrical contact points; it is a safety hazard because it cuts down on vision on the highway; and it keeps tourists away from scenic spots hidden by smog or smoke.

3. *Ibid.* p. 43.



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³ *Ibid.* p. 43.

State Board of Health's Authorization

Why is the State Board of Health concerned about air pollution and its effect on health? This state agency is charged under Chapter 381 of the Florida Statutes to "... formulate general policies affecting the public health of the state ..." ⁴ and "commence and maintain all proper and necessary actions and proceedings to enjoin and abate nuisances dangerous to the health of persons, fish and livestock ..." ⁵ It is charged with protecting and preserving the public health.

The State Board of Health, furthermore, was given authority in 1955 when the State Legislature amended Chapter 381 of Florida Statutes to adopt rules and regulations necessary "to control pollution of the air ... where created on private property, in public places, or in any place or manner whatsoever." ⁶

Florida Statutes, in Section 403.02, defines air pollution as the "presence in the outdoor atmosphere of substances in quantities which are injurious to human, plant or animal life, provided that all aspects of employer-employee relationship as to health and safety hazards are excluded, and provided further, the term air pollution shall not be deemed to include smoke effluent from pulp and paper mills equipped with and operating electrostatic precipitators or other mechanical devices whereby not less than 90 per cent of the solids of such smoke are removed therefrom." ⁷

Chapter 386 of Florida Statutes, as revised by Chapter 63-64, House Bill 513, 1963 Session, provides that air pollutants, gases and noisome odors which are harmful to human or animal life—existing, permitted, maintained, kept or caused by any individual, municipality, organization or corporation, governmental or private, shall constitute prima facie evidence of maintaining a nuisance injurious to health. ⁸

4. *Florida Statutes*, Chapter 381.03 (1) (a), State of Florida, 1965. p. 1879.

5. *Florida Statutes*, Chapter 381.031 (4) (b) 3. State of Florida, 1965. p. 1880.

6. *Florida Statutes*, Chapter 381.031 (1) (g) 7. State of Florida, 1965. p. 1880.

7. *Florida Statutes*, Chapter 403.02 (3), State of Florida, 1965. p. 1970.

8. *Florida Statutes*, Chapter 386.041 (1) (a), State of Florida, 1965. p. 1902.

The definition of air pollution in the law, both expressed and implied, restricts matters to be dealt with by the State Board of Health to those situations in which pollution is injurious or could reasonably be expected to become injurious to human, plant or animal life. There is no question that such pollution should be eliminated. In some instances such pollution does occur, but in many cases this is very difficult and costly to prove. Some of these conditions develop over a long period of time and by the time they are identified, the damage has been done. There are adverse effects of air pollution which do not come within the definition of the law. These include reduced visibility, soil and corrosion of materials, deterioration of real estate value, and diminished attractiveness of an area for recreational purposes.

The myriad of complaints received by the State Board of Health demonstrates that effects of air pollution, other than health impairment, are of concern to residents of the state. Even where a sound legal basis for pollution control is lacking, the State Board of Health works toward solving these problems by providing technical information and consultation services to those affected. Reasonable working relationships have been established with the phosphate, power and asphalt industries and other sources of air pollution throughout the state. These relationships allow for a mutual understanding of the technical and administrative problems of pollution control.

This issue of **Florida Health Notes** will tell you what the State Board of Health and County Health Departments are doing about air pollution problems and what they need to enlarge the programs already in existence or create new ones in areas where problems occur.

What is Air Pollution?

As long as there has been air on this earth, there has been air pollution. There is no such thing as "pure air." Purity of the air is a matter of degree and it can fluctuate with current move-

ment and speed. Air in some locations is freer of pollutants at certain times than air in other locations at the same time.

Areas far from cities and civilization have polluted air. Nature pollutes the atmosphere with sand and dust storms, forest fires and volcanic eruptions. Living and dying things emit pollution. The terpenes given off by forests create the haze that gives the Blue Ridge and Smoky Mountains their names. Flowers give off pollen and decaying matter gives off gases.

Pollution in nature is minor compared to what man has given off under the guise of civilization. Man spews tons of noxious gases and dirt into the atmosphere every day. In the United States alone, 133 million tons of waste flow upward annually through the skyward sewer.

You can see part of this waste matter. The smoke is made up of tiny particles of carbon and ash as well as microscopic particles of metal filings, lead, oil and grease. Water vapor may be given off as steam but this is dissipated as water.

Not all air pollution can be seen. The invisible gases that pollute the air include the dangerous oxides such as sulfur dioxide, nitrogen dioxide and carbon monoxide. There are also hydrogen sulfide and ozone and with the exception of carbon monoxide which is odorless, all are detected by one of the most sensitive chemical detectors of all—your nose.⁹

Sources of Pollution

Where do all of these pollutants come from? An automobile takes a ton of air for every tank of gas it burns, but in turn it releases three pounds of carbon monoxide, plus lesser amounts of hydrocarbons, nitrogen oxides, aldehydes, ammonia, lead organic acids, sulfur compounds and metallic oxides. In colder climates, coal discharges black smoke and 48,000 tons of sulfur dioxide every day from home heating and industrial plants.¹⁰

9. *Op. cit.* Berland, Theodore. p. 43.

10. *Ibid.* p. 43.

As in other states, sources of pollution in Florida include chemical plants, electric power generating stations for municipalities and institutions, home heating plants, trash burners, asphalt plants, incinerators and pulp and paper mills. In the cooler seasons, Florida's orange-growing areas are blanketed with black smoke from citrus smudge pots burned to protect citrus trees from the cold.

What happens to this pollution? We live at the bottom of a sea of air. It is usually warmest at ground level. The air above is much cooler, normally dropping about five degrees Fahrenheit in temperature for every thousand feet of altitude. At 30,000 feet, usually the height for jet airliners, the temperature outside the planes is a minus 50 degrees.

Air pollutants normally rise through the cold layers of air simply because they are lighter and warmer, like oil rising to the top of a glass of water. Sometimes a layer of warmer air, several thousand feet up, may keep the rising air and its pollutants from rising any further. This is how a temperature inversion (a high layer of air which is warmer than lower air) acts as a lid.¹¹ Sometimes a similar type of inversion occurs at ground level.

Florida has some Air Pollution Problems

While Florida does have some air pollution problems in various geographical locations, its municipalities do not have the experiences of such cities as Los Angeles, New York, Chicago or London. Florida does not have such terrain as the mountains of California or narrow industrial valleys of the North where air pollution is a well-known problem. Climate is Florida's greatest asset in many ways. The state does not have the long winters and the considerable pollution from fuel consumed by long operation of heating systems. Winds which cross the state usually move at a rate of speed that eliminates much of the pollution. When a high pressure system does settle down over an area for several days, the stable air may act as a "lid" which does not allow the upward dispersion of pollution.

11. *Ibid.* p. 44.

Industrial cities, such as London, Pittsburgh and St. Louis have fought and conquered smogs of sulfur dioxide and water vapor. Los Angeles has found itself battling a smog composed, not so much of smoke, but of gases, including gasoline vapor, nitrogen dioxide, ozone and peroxyacetyl nitrate. When combined with the fumes from such a tremendous number of automobiles (1300 cars per square mile), the photochemical smog is overwhelming.

Chicago, with an average of 40 days of temperature inversions a year, has more automobiles per square mile than Los Angeles,



plus pollution from steel mills and industries. New York City has battled apartment building incinerators, commercial incinerators and millions of automobiles and thousands of diesel buses and trucks.¹²

Florida's three largest cities, Miami, Jacksonville and Tampa, have gasoline consumption exceeding the amounts associated with photochemical smog in other cities. Even though the state has an abundance of sunshine, one of the factors involved in making

12. *Ibid.* pp. 43-44.



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photochemical smog, favorable trade winds and rare occurrences of daytime inversions restrict the appearance of smog to a few times a year.¹³

Because the automobile is an important contributor to air pollution, the staff of the State Board of Health at one time considered recommending the attempt to have statewide regulations or laws passed in Florida restricting the emissions of exhaust fumes from automobiles. However, it was felt that such statewide controls would be ineffective unless there were similar controls elsewhere in the country. In some areas of the state there are nearly as many out-of-state cars at certain seasons of the year as local automobiles registered in Florida. Therefore, the proposed laws were discarded because they would have penalized Florida motorists and allowed out-of-state motorists to go free. The State Board of Health has supported nationwide rules because these were the only practical approach to the control of air pollution from automobiles.¹⁴

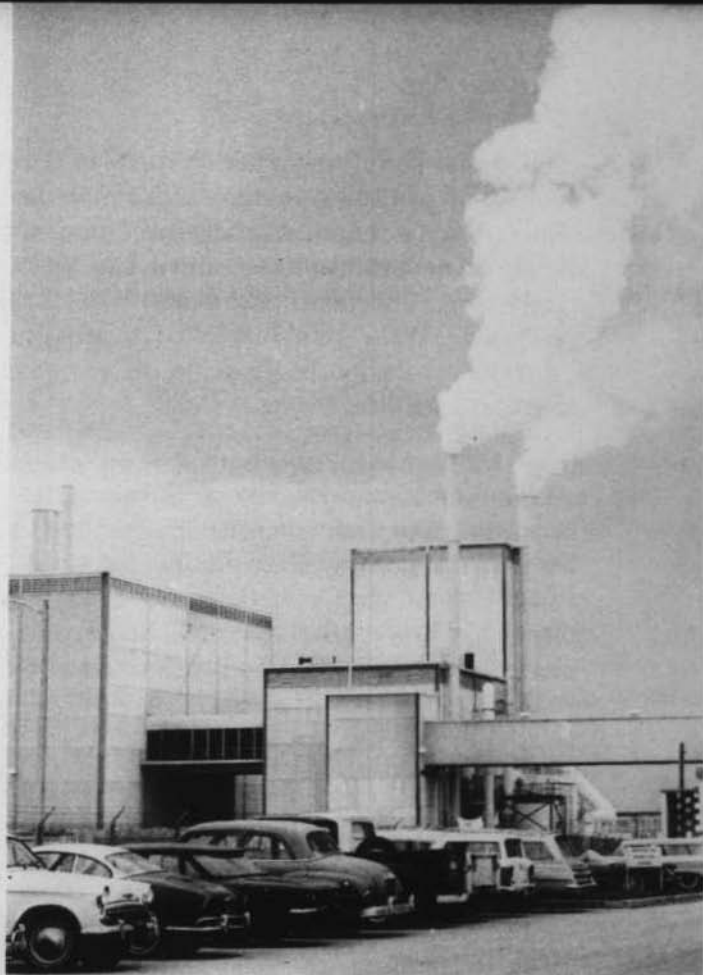
While Florida has climate, temperature and terrain that helps prevent air pollution, the geographic distribution of population and manufacturing could lead to air pollution problems. The 11 most populous counties have 70 per cent of the population and 75 per cent of the manufacturing. About a third of the paper industry, three-fourths of the chemical manufacturing and food processing and all but two of the phosphate plants are located in these counties.

Many leaders in the state are actively seeking to develop new industry but few, if any, would jeopardize the \$3 billion tourist industry which the state enjoys. Many tourists spend much of the cooler season along the lower east and west coasts and communities in these regions are skeptical of any activity which might lower the tourist desirability of these areas. Some communities are so concerned with the possibility of industries that are heavy users of fuels which cause smoke, that civic leaders

13. Harding, C. I., McKee, S. B. and Schueneman, J. J. *Florida's Air Resources*. Florida State Board of Health, Jacksonville, Florida, 1961. p. 37.

14. Patton, Vincent D. "Florida's Air Pollution," paper presented before Florida Chapter American Public Works Association, Sixth Annual Convention, Tampa, Florida, May 5, 1966.

Phosphate fertilizer plants, such as this one, emit fluorides and other gases into the air. Limits have been set by the Florida Air Pollution Control Commission and the State Board of Health as to how much fluoride can be released by each plant.



actively discourage industry from settling in areas that are devoted primarily to tourism.¹⁵

A Major Problem—The Phosphate Industry

While Florida has some areas with minor air pollution problems, a major cause of concern has been the 500 square mile area in Polk and Hillsborough Counties that is the phosphate "country." Approximately 75 per cent of the nation's supply of phosphate, and one-third of the world's supply, is mined in this area. In 1959, 11.5 million long tons, valued at \$71.6 million, were mined. By 1965, mine production had increased to 18.2 million long tons worth \$131 million.

15. *Op. Cit.* Harding, C. I., McKee, S. B. and Schueneman, J. J. p. 21.

This is an industry which developed essentially from only production of ore to the complex chemical processing industry known today. Early manufacturing produced what is known as "single strength superphosphate" until the end of World War II, when triple superphosphate, a more concentrated form, began to be produced. With this increased processing, there resulted a considerable evolution of fluoride, in various forms, which is tied up in phosphate ore.¹⁶

The rock is primarily a fluorapatite and practically insoluble in water. The fluoride must be removed before the phosphate can be made soluble and available as plant food. Due to the high freight rates for shipping raw rock, great emphasis has been placed on processing the rock in Florida into high-analysis phosphate compound for shipment to other parts of the country.

In removing the fluoride from the rock, gases are emitted into the atmosphere and absorbed by vegetation, such as grasses, citrus and gladioli in the Polk-Hillsborough area. It is the opinion of some people that when cattle eat contaminated forage, excessive amounts of fluoride can cause the gums and teeth of the cattle to become spongy, the teeth to fall out or wear away. There is an overgrowth of bones. Milk production and the reproductive process of cattle are affected.

It is claimed by some people that the effects of the fluoride absorption by citrus trees vary from minor reduction of crops to complete defoliating of trees and dropping of fruit. Approximately 25 per cent of the state's citrus crop is grown in Polk County so this condition could have an effect on the economic life of the area. Large areas of Hillsborough County are devoted to gladioli culture. These flowers are one of the plants most sensitive to fluorides and during adverse weather conditions, whole fields are said to have been "burned" in a short time by the fluorine containing gases.¹⁷

16. *Op. Cit.* Patton, Vincent D.

17. *Op. Cit.* Harding, C. I., McKee, S. B., and Schueneman, J. J. pp. 24-26.

Although the bulk of phosphate mining and processing is located in Polk and Hillsborough Counties, considerable deposits of phosphate rock have been found in other areas of the state. Large mining and processing complexes have been constructed in Hamilton and Manatee Counties and have started operations.

The Florida Air Pollution Control Commission

Florida took action on its air pollution problems in 1955 when Chapter 381 of **Florida Statutes** was revised, assigning to the State Board of Health the authority to promulgate rules and regulations for the control of air pollution. However, prior to and during this period local health departments did spend considerable time on minor air pollution problems associated with public health nuisance abatement activities. In 1957, the State Legislature adopted the Florida Air Pollution Control Law, Chapter 403 of **Florida Statutes**, which provided for an Air Pollution Control Commission within the State Board of Health.

For two years after the Air Pollution Control Law was passed air pollution control was under the State Board of Health's Bureau of Preventable Diseases but in July 1959 the Bureau of Sanitary Engineering took over the work. The majority of the activities has centered in the Polk-Hillsborough Air Pollution Control District which has its headquarters in the State Board of Health's Winter Haven Laboratory. The Winter Haven group is charged with the responsibility of enforcing rules and regulations of the Florida Air Pollution Control Commission and conducting other work, such as air sampling surveys in other counties, which pertain to air pollution control. In addition, one sanitary engineer has been assigned to investigate air pollution throughout the state and to secure abatement of air pollution sanitary nuisances.

A new "permit system" was established within the District by the Commission on January 20, 1965, whereby permits covering fluoride emissions are granted for construction, limited operation and operation of phosphate processing and chemical plants.¹⁸

18. *Florida Administrative Code*. Rules of the Florida Air Pollution Control Commission, 28-4.02. p. 11.

Activities of the Air Pollution Control District

The programs of the Polk-Hillsborough Air Pollution Control District vary and include:

Monitoring grasses, filter papers, pasture grass samples and gladioli; in-plant inspections; source air sampling; and plan review and special projects for specific air problems.

The grass monitoring program, discontinued about a year ago, had involved six Pensacola Bahia grass stations located on a one-mile radius around each phosphate plant. Grass was sampled monthly and analyzed for fluoride content. At each of these Bahia grass sites, chemically treated filter papers were also exposed for four weeks and then analyzed. The results provided an indication of the fluoride extracted from the air. Pasture grass sampling was given greater emphasis in 1964 and currently samples are collected from 54 stations. Graphic presentation of these samples indicate changes in fluoride concentrations for specific time periods.

Gladiolus leaf and ambient air samples are collected and tested during the gladiolus growing season.

Since May 1, 1963, 103 approvals have been granted to fertilizer manufacturers for the installation of devices to control the emission of fluorides and dusts within the District. Such control devices remove most of the fluorides generated by the fertilizer industry.

In-plant inspections, source samplings and plan reviews are conducted by the Winter Haven staff to implement the approval of plans and issuing of permits which are called for in the rules of the Florida Air Pollution Control Commission.

Under the "permit system" no person can construct any new installation or plant without first submitting the plans and specifications to the State Board of Health for its review and approval and obtaining a permit to construct. When approval is granted by the State Board of Health, a maximum allowable daily emission of fluorides is set and a permit to construct is issued accordingly.

Following construction of the installation or plant, an inspection is made by the State Board of Health personnel to determine whether the conditions of the permit to construct have been met. If it is found that the installation or plant conforms to the law, the State Board of Health issues a **limited permit to operate**, which is effective for a period of six months. During the six-month period tests are performed by the State Board of Health personnel to determine compliance with the maximum allowable daily emission set forth by the state agency. If compliance is evident a **permit to operate** is issued.

A total of 58 permits have been issued by the State Board of Health. Of these, 27 have been **permits to construct**, 27 have been **limited permits to operate**, and four have been **permits to operate**. As of September 1966, one other plant was reported eligible to receive a **permit to operate** and three others were ready to be tested.

In addition to the above projects, several special studies have been performed by personnel of the Bureau of Sanitary Engineering. Noteworthy among these were a detailed study of the extent of air pollution within the city limits of Bartow, a study of the

Some Accomplishments

"Unquestionably, the state program and activities in the Polk-Hillsborough District have effectively reduced air pollution emissions in this area. This has been accomplished even though there has been a tremendous expansion of the phosphate rock processing industry within the last eight years. It is generally agreed, however, that the air pollution problems are not completely resolved and much additional effort is needed. The Florida State Board of Health is fortunate in having on its staff engineers who are nationally recognized for their expertness in the field of air pollution control from phosphate rock processing operations."

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Associate Regional Health Director
for Environmental Health Services
(in letter to Wilson T. Sowder, M.D.
State Health Officer)

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Also the Winter Haven staff has assisted the consultant engineer of the central office in the numerous investigations of complaints, sampling studies and presentation of courses.

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Enforcement of Rules and Regulations

The law gives the State Board of Health the power to investigate complaints of air pollution. If after investigation the complaints are justified and the pollution continues beyond the emission limits, the State Board of Health, through conferences, conciliation and persuasion, as required by law, can request the offending company to eliminate the pollution.¹⁹

If the situation is not corrected within 60 days following the filing of the complaint, the State Board of Health can notify the company that it is being brought before the Air Pollution Control Commission for a hearing. If the Commission agrees with the State Board of Health that pollutants are being released into the air, the company is given a reasonable amount of time to remedy the situation. Should the company fail to apply preventive or corrective measures within the specified time, an injunction can be sought in the courts. If a trial is held, the company can be

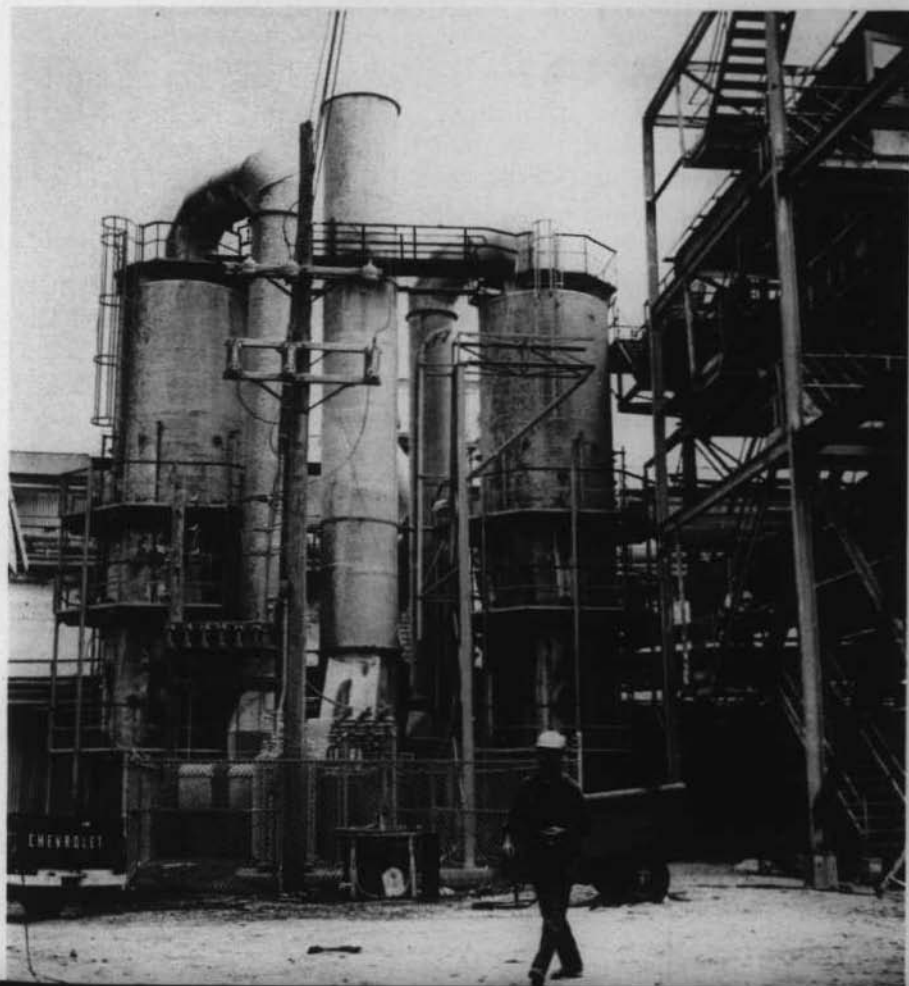
19. *Florida Statutes*, Chapter 403.13 and 403.14, State of Florida, 1965, p. 1972.

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While there presently is no known method of establishing a 100 per cent control of fluorides and sulphur dioxides, strict emission quotas are regularly imposed on phosphate operations to

20. "Air Pollution" *Florida Health Notes*, Florida State Board of Health, Jacksonville, Florida. Vol. 57, No. 1, January 1965. p. 16.

Fumes from a phosphate fertilizer plant cannot be seen because they are funneled through this "scrubber" which washes the air before it is released into the atmosphere. The phosphate industry has spent millions of dollars on research and installation of such air pollution control devices.



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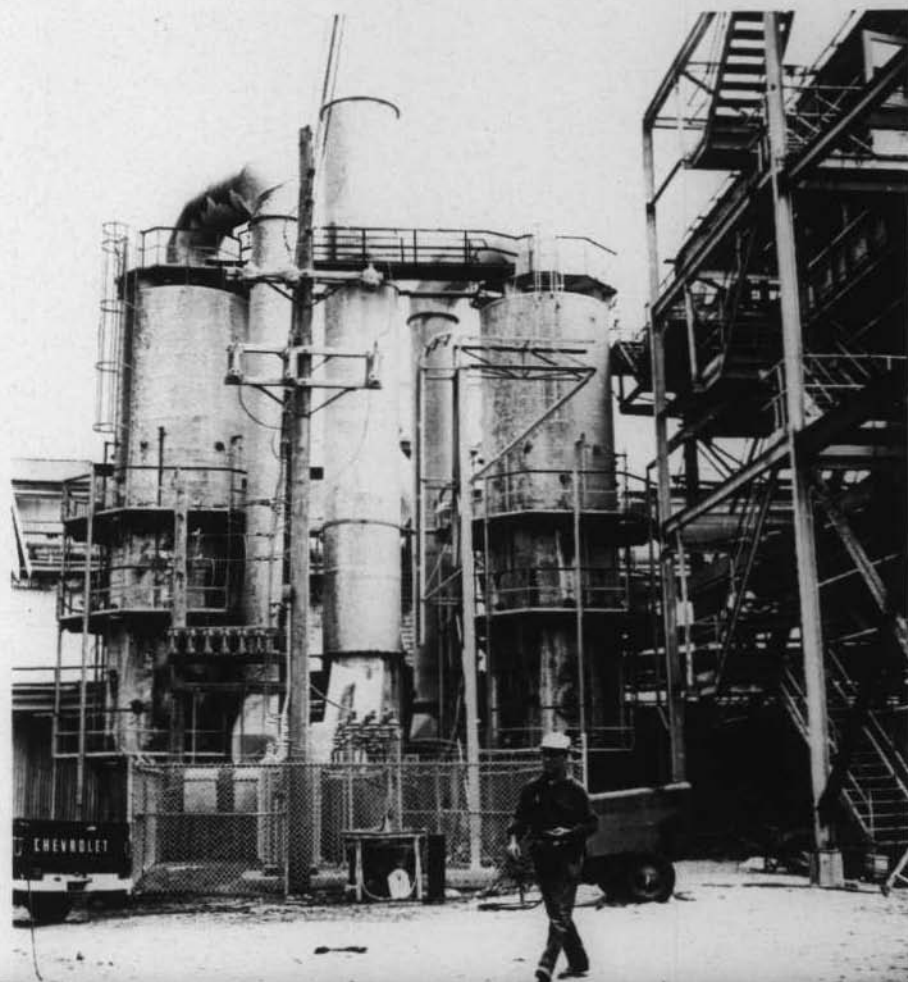
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control fluoride emissions. Giant strides have been made, especially since 1960, with the fluoride emissions in the Polk-Hillsborough area dropping from 33,000 pounds to 13,000 pounds per day in 1965.²¹ Many of the phosphate companies have installed scrubbers and other devices at the insistence of the State Board of Health. One problem remaining is the pollution from the huge drying sheds where the phosphate rock is allowed to "cure." In the process of curing, the rock gives off fluorides into the air.

Agricultural and Phosphate Interests

Air pollution has spurred open resentment between agricultural and phosphate interests and aroused demands that the State Board of Health curb emissions of fluorine and sulphur dioxides, plus other gases and particulates, from phosphate plants. There is no argument that pollution does exist and such pollutants are emitted from phosphate operations in such quantities and in sustaining amounts to damage crops and livestock and injure health.

The question to be solved by scientists is: In what quantities and for what periods of time must the pollutants be in existence to result in damage? Other variables, such as atmospheric conditions, wind direction and distance between phosphate operations and agricultural areas also bear heavily on the question.

Dusts, sulphur dioxide, sulphur trioxide, sulphuric acid mist and fluoride from the phosphate plants have been determined the general cause of air pollution in the Polk-Hillsborough Air Pollution Control District. These are the pollutants the State Board of Health is attempting to curb.

Under the 1965 regulations, emission levels for existing plants within the districts were established at .6 of a pound of fluorides per production ton of phosphorus pentoxide or chemical equivalent per day. New plants to be designed will be equipped to comply with a maximum emission level of .4 pounds of fluorides per ton of manufactured phosphorus pentoxide or its equivalent per day.²²

21. Harmon, Joe, "Officials Look to Science for Air Pollution Solution." *Tampa Tribune*, July 10, 1966.

22. *Florida Administrative Code*. Rules of the Florida Air Pollution Control Commission. 28-3.03 (1) and 28-3.04 (2), pp. 7-8.

The grass samples taken by field survey teams from the State Board of Health laboratory showed the concentration of fluorides in a test area and the plotting of concentrations gave a reading of the pollution configuration of an area. Ambient air samples were used to establish the presence of airborne fluorides and the pollution patterns in the test area. A comprehensive analysis of the fluoride in any given area is virtually impossible but field teams are able to capture samples of ambient air in a specially-designed apparatus and measure the concentrations of fluorides at different times of the day.

This is an "exact" science within a fine tolerance and the task of measuring samples of air throughout the two-county area is so immense that chemists and engineers have found it impractical to use the fluoride content of air as a standard of pollution. Concentrations of sulphur oxides are measured and established by the use of equipment housed in mobile units.²³

Statewide Pollution Control Activities

It is the policy of the State Board of Health to promote local control activities. However, some direct contact is practiced by the state agency in securing abatement of air pollution problems and in reviewing and approving plants for construction.

Outside the Polk-Hillsborough District, the activities of the State Board of Health include the work of staff members in Jacksonville and regional offices and indirectly all County Health Departments. Overall policy is established by the State Board of Health and is promulgated in various regulations contained in the **Florida Administrative Code**. Notices requiring corrective action are issued in the name of the State Health Officer.

The statewide air pollution control program consists primarily of giving technical assistance to city and county air pollution control operations and the conducting of special technical investigations which are beyond the capabilities of local agencies.

23. *Op. Cit.* Harmon, Joe.



Complaint investigation usually involves a visit to the person making the complaint, an investigation of the sources of possible air pollution, if known, and attempts through conferences, conciliation and persuasion to arrive at a solution.

In many cases it is necessary to conduct source testing to determine whether an operation is being carried out contrary to good engineering practices. One such investigation involved the fixing of the quantity of particulate material being discharged from an asphalt plant. It was determined that emissions were considerably in excess of those from similar plants where control devices were employed. Because no substantiating medical evidence could be obtained, and in the absence of specific standards,

Cattlemen claim that pastures and cattle (above) have been damaged by pollutants emitted by phosphate complexes, such as the one at right. Zoning is perhaps one answer to this problem but the State Board of Health has no jurisdiction in this field.

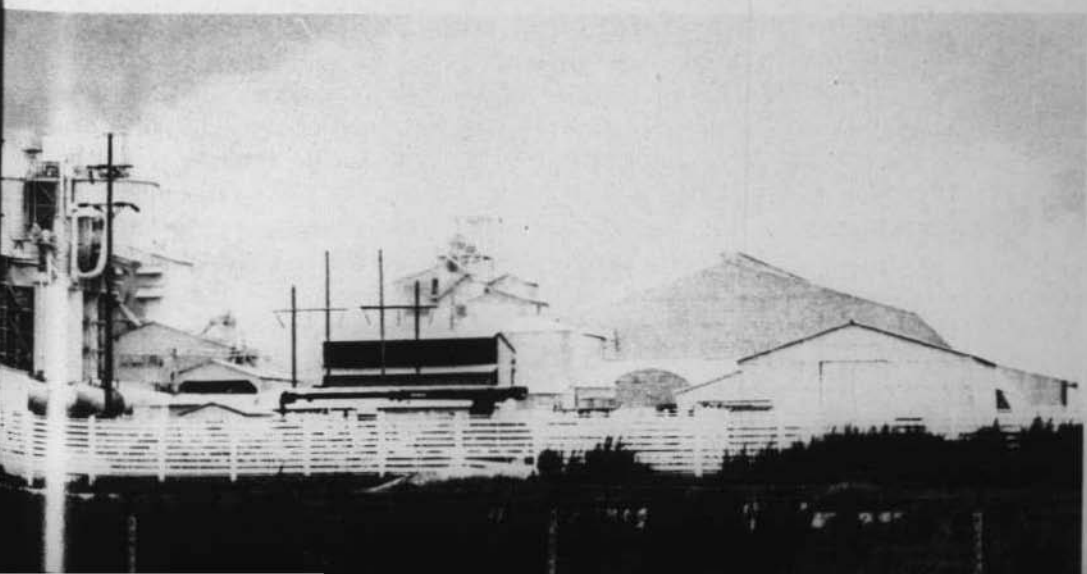




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Realistic standards for asphalt plant emissions were set forth in a revised chapter of the **Florida Administrative Code** in October 1965.²⁴ These standards, based on a series of tests carried out in cooperation with the Asphalt Contractors Association, gave specific limitations on the quantity of particulate material which could be emitted from asphalt operations. Ten plants were sampled by the State Board of Health staff and an ambient air sampling study was also conducted in the vicinity of one plant.

24. *Florida Administrative Code*. The Sanitary Code of Florida, Chapter 17c-9.06 (1) (b), p. 101.

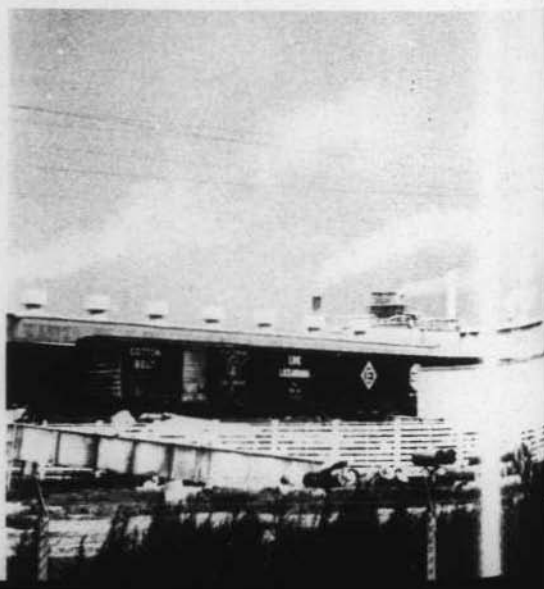




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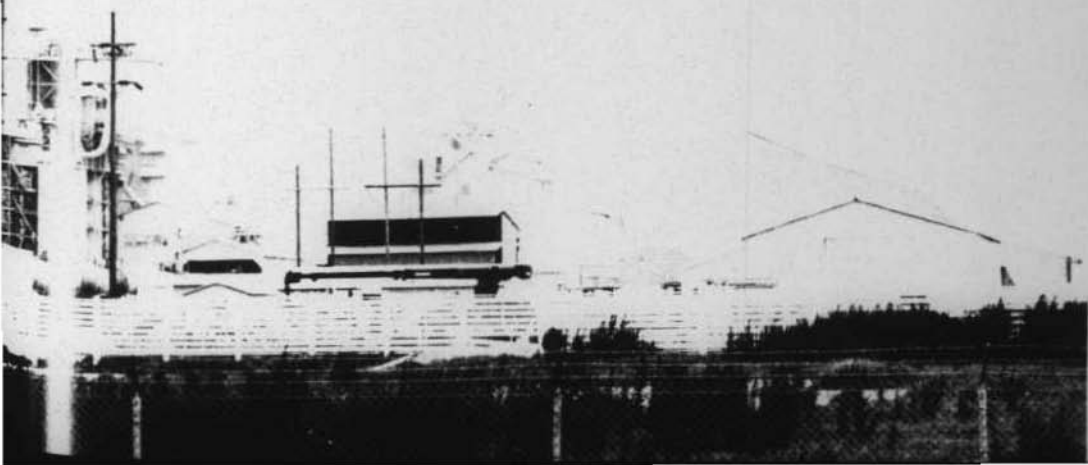




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Incinerator emission standards were based on surveys of both municipal and package-type units. Three municipal plants and several small package-type incinerators were tested by the State Board of Health people and one municipal plant was sampled by a private firm at the request of the state agency.

A current program is underway to characterize the quantity and quality of air pollution emissions from citrus peel dryers. There are approximately 30 such peel dryers in Florida. All have been visited and six have been tested. Much of this work has been directed toward selection of the proper procedure for the collection of peel dryer emission, the best organic solution to use as a collection medium and the proper sample preparation and chromatographic column for final analysis. An outgrowth of this preliminary work has been the development of a cooperative study to be conducted at the Lake Alfred Citrus Experiment Station. The station personnel will operate their pilot plant peel dryer and several tests will be conducted during variations of several controlled conditions.

In addition to sampling and testing activities, the Bureau of Sanitary Engineering of the State Board of Health has completed detailed surveys in Hillsborough, Alachua, Pinellas and Manatee Counties. Based on these data the bureau has made recommendations related to the counties' air pollution control programs which should be implemented. Similar studies in Broward and Escambia Counties are in progress.

The State Board of Health, with the U. S. Public Health Service, participated in a pilot study of air pollution conditions in Jacksonville. The objectives of the pilot study were to develop a preliminary opinion as to whether the City of Jacksonville has a generalized air pollution problem and to determine whether fluorides and sulfur dioxides were present in the atmosphere in concentrations capable of producing the damage to vegetation which has been experienced in Jacksonville-Duval County area.²⁵

25. Sheehy, J. P., et al. "A Pilot Study of Air Pollution in Jacksonville, Florida." U. S. Department of Health, Education, and Welfare, Public Health Service, Division of Air Pollution, April 1963.

Also in cooperation with the U. S. Public Health Service and the Dade County Department of Public Health, a report on the management of Dade County's air resources was prepared.

Liaison has also been established with the pulp and paper industry. This industry can certainly be classed as one of the industrial giants in Florida. Primarily, these mills are located across the northern part of the state. They are characterized by their enormous size and insatiable consumption of pulpwood and the production of certain waste products. One of the economic features of the "Kraft" process, which the majority of these mills use, is the ability to recover and reuse chemicals which could otherwise be added to the atmosphere. As a result, this economic impetus has resulted in several recovery devices being installed which also reduce the pollution emissions. However, it is extremely difficult to build such a device so that it will be 100 per cent efficient. As a result, there is some loss of particulate matter into the atmosphere. To further complicate the picture, sulfur-containing compounds are used in the Kraft process and the human nose is very sensitive to some of these materials, even in very low concentrations.²⁶

The power industry is another industrial giant in Florida. There are problems of emissions of particulate matter and sulfur compounds in this industry also. The State Board of Health has been concerned with several power plants using Bunker C oil which, when burned, gives off particulate matter as well as sulfur dioxide and acid mist.

One power plant has been tested in an effort to relate sulfur-oxide emissions to varying oil-natural gas rations at different values of excess air. Because the natural gas supply is limited, the State Board of Health has taken an active part in proceedings before the Federal Power Commission to secure additional amounts of natural gas for the state. It was anticipated that the additional supply of natural gas for use by power plants would help eliminate complaints relative to the operation of generating stations, particularly in urban areas where fuels of high sulfur content are

26. *Op. Cit.* Patton, Vincent D.

burned. It appears that this application has been denied for a number of reasons. One of the jobs of the Federal Power Commission is to conserve the nation's natural resources.

Another power plant is currently expanding its generating capacity and installing air pollution control equipment which is far more efficient than that installed on the original construction. This is a direct result of the revision of Chapter 170C-9 of the **Florida Administrative Code.**²⁷

As previously mentioned, phosphate processing is now becoming significant in areas outside of Polk and Hillsborough Counties. New facilities in Hamilton and Manatee Counties have been reviewed by the State Board of Health and assurance has been given by the companies that the most up-to-date air pollution control devices will be utilized at these plants.

Air Pollution is a Health Problem

There is little doubt that air pollution is at the very least a contributing factor to the rising incidence of chronic respiratory diseases, lung cancer, emphysema, chronic bronchitis and asthma. There is some evidence to suggest that certain types of air pollution may even contribute to those upper respiratory diseases known as the "common cold."²⁸

"It is recognized that at 1000 parts of carbon monoxide per million parts of air, the gas kills quickly. At 100 parts it produces bad headaches and dizziness. At present, 50 parts is considered the danger point. But as we learn more we are less sure. California found that 30 parts per million for eight hours seriously affects people who already have poor blood circulation. Since monoxide sickens and kills by capturing the oxygen carriers in the blood, people with heart disease, arteriosclerosis, asthma or emphysema, as well as heavy smokers, are unusually vulnerable."²⁹

27. *Florida Administrative Code.* The Sanitary Code of Florida. Chapter 170c-9, p. 101.

28. Stewart, William H. "Air Pollution—Time for Action." Paper presented at the 59th annual meeting of the Air Pollution Control Association, San Francisco, Calif., June 20, 1966.

29. Bagdikian, Ben H. "Death in Our Air" *The Saturday Evening Post.* October 8, 1966. p. 106.

The number of people succumbing to lung ailment is doubling every five years. Some medical studies have found an association between polluted air and lung cancer. But determination of the cause of this killer is complicated by the contribution of cigarette smoking as well as many other factors, such as infection, viral agents and genetic predisposition.³⁰

The State Board of Health identifies air pollution as a public health hazard. It encourages and will investigate legitimate complaints from citizens of Florida whose health is or has been affected by pollutants.

In 1966, a petition with approximately 4000 names was received by the State Board of Health and Florida Air Pollution Control Commission from temporary and permanent residents of the Polk-Hillsborough Air Pollution Control District.

The petition noted a "serious menace" and asked that as "experts on air pollution and charged with the responsibility under the laws of this State of Florida to control it," the State Board of Health and Commission take steps to abate the problem. The State Board of Health set out to determine the extent to which air pollutants had damaged the health or impaired the comfort of individuals signing the petition. Inquiries were sent to 1000 names on the petition whose addresses could be ascertained. A second mailing was made, which was followed up by visits to permanent residents who had failed to respond to the second communication.

The results of the survey showed that 8.8 per cent had complaints of health effects; 5.9 per cent complained of annoyance or irritations; and 50.4 per cent had no complaints. The balance, 34.9 per cent, were either winter guests or temporary residents; had not signed the petition; promised information by mail; refused information; or had died.³¹

30. *Op. Cit.* Berland, Theodore.

31. Appendix A. The Health Effects of Air Pollution in Polk County.

Eleven physicians who had been consulted by some of the petitioners were contacted by the State Board of Health. Some physicians were convinced that air pollution was a significant contributor to the complaints of some of their patients while other physicians did not attribute symptoms to this cause.

Some petitioners named specific plants as contributing to their discomfort. Complaints which related to the industry as a whole signified eye or respiratory tract symptoms. Complainants mentioned burning of the eyes, irritation of the nose and throat and excessive coughing. Symptoms of an asthmatic nature or sinus trouble and post-nasal drip were repeatedly mentioned and episodes of nose bleeding were also reported, particularly in one school.

The State Board of Health participated in two studies and the data showed that there was no significant evidence of either harmful or beneficial effects of fluorides due to air pollution in Polk County.

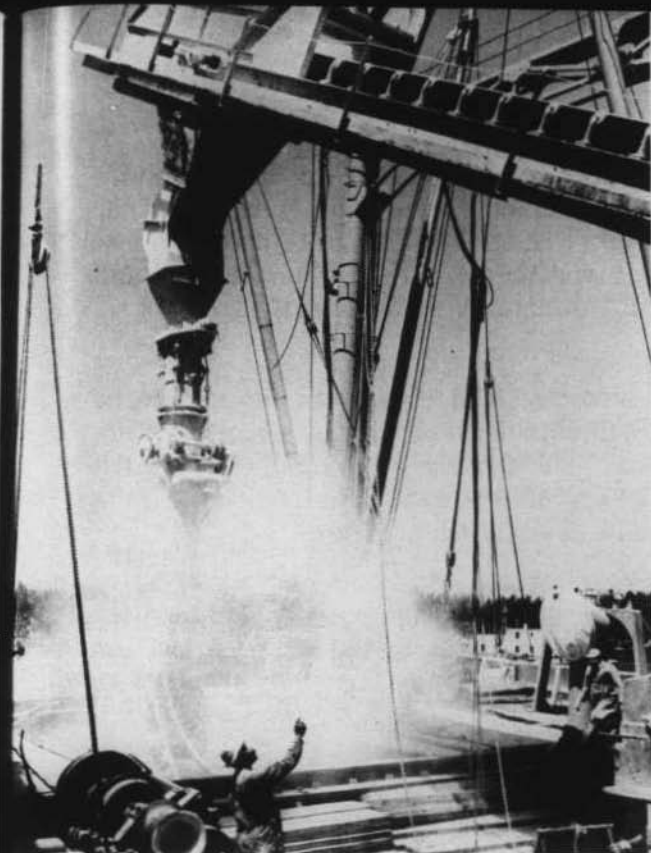
The problems of the effects of air pollution on health is of concern to the State Board of Health. The maintenance of an environment conducive to good health is one of the reasons the Board is seeking more rapid control of air pollution in the Polk-Hillsborough area, as well as other areas of Florida with similar problems.

The State Health Officer has directed that continuing studies into the effects of air pollution be planned and has given assurance that appropriate field assistance can be made available.³²

Help for the People

Because air pollution does not stop at state lines, the U. S. Congress passed the Clean Air Act of 1963. The act with the amendments of 1965 includes strengthened research and technical assistance activities; a matching-grant program which offers substantial financial stimulation for the creation of improved state and local regulatory agencies; a Federal abatement program

32. *Ibid.*



Phosphate rock, which is shipped from Florida throughout the world, is loaded aboard a ship at Tampa. Workers aboard the ship are required to wear masks to avoid breathing in pollutants.

focused primarily on interstate problems; and national regulations, relative to automobile exhaust emissions.

The Surgeon General of the U. S. Public Health Service has stated, "... the primary thrust of Federal air pollution legislation is to help states and local governments improve their efforts to control air pollution. There is no doubt in my mind that it was the intent of Congress to accelerate the development and improvement of strong state and local regulatory control programs, strong enough and independent enough to stand up to those from industry or government who are always ready to say, 'Yes, this is a serious problem, but let's take care of it next year or the year after that.'

"Totally, including both Federal and non-Federal contributions, the funds available for state and local air pollution programs have increased by about 65 per cent since the adoption of the Clean Air

Act. Some \$20 million is now being invested annually in state and local programs—about \$5 million at the state level and about \$15 million at the local level. While these amounts are far from adequate they do compare favorably with the combined state and local spending of about \$12.7 million at the end of 1963.

"Of the agencies that have received Federal grants under the Clean Air Act, 52 are developing new programs. About 18 are establishing programs which had already been legally authorized but not activated. In addition, 40 agencies have received grants to assist in the improvement of existing programs.

"The number of state programs in being or under development has reached 33, compared to 17 in 1961. In the same period, the number of local programs in operation has increased from 85 to 130.

"While the response of states and local agencies has been encouraging, we have really only begun to make a beginning. Most cities and states are still without the services of effective control programs. There are now 33 state air pollution programs, but many of these are scarcely more than nominal. They have neither the authority nor the resources to carry on effective control activities. Only a half-dozen engage in more than a minimal degree of actual abatement activity, few are serving those communities which are too small to operate their own local programs.

"Efforts at the local level are equally deficient. Our most recent estimate indicates that only 50 per cent of the urban population of the United States is served by local air pollution programs. Where they do exist, they commonly do not have adequate resources. On a per capita basis, annual spending for local programs has increased in recent years from a medial figure of 10.8 cents to 15.2 cents. This increase is hardly adequate in the light of estimates that an effective local control program for a middle-size city requires an expenditure of at least 40 cents per capita per year."³³

33. *Op. Cit.* Stewart, William H.

Financing and Personnel

The State Board of Health has lacked adequate funds to carry on an effective statewide air pollution control program and lacked the ability to use funds to attract personnel because of poor salary schedules.

Howard W. Chapman, associate regional health director for environmental health services for Region IV of the U. S. Public Health Service, has noted that, according to 1965 data, the State Board of Health spent approximately \$176,000 for air pollution activities. But \$146,000 of this amount was spent in the Polk-Hillsborough Air Pollution Control District, leaving only \$30,000 for the rest of the state. The per capita expenditure in the district was about 23.4 cents, while in the remainder of the state, it was 0.6 cents. This amount is far below the national average of four cents per capita per year spent on air pollution control. In general, a comprehensive state air pollution control program that includes studies, technical assistance to local program, plan review and approval, and enforcement authority should have a minimum budget of from two to five cents per capita per year.³⁴

In addition to the monies the State Board of Health has spent on statewide air pollution control, several county and local programs are in existence. A total of \$88,856 was spent in 1965-66 by the Dade County Department of Public Health; Palm Beach and Manatee County Health Departments are spending \$68,584 and \$64,248, respectively, in 1966-67; and the Jacksonville-Duval Air Improvement Authority has budgeted \$80,000 for the current fiscal year.

Despite the shortcomings of Florida and the problems that it faces, the state ranks fifth in the list of states and territories in the expending of non-Federal funds for air pollution. The **Conservation Foundation Commentary** shows that only California, New York, New Jersey and Pennsylvania are ahead of Florida.³⁵

34. Appendix B (2). Letter from Howard W. Chapman to Wilson T. Sowder, State Health Officer.

35. *Conservation Foundation Commentary*, published by Conservation Foundation, Washington, D. C., July 15, 1966, p. 17.

To overcome the deficiencies of the past, the State Board of Health is requesting a total of \$6.5 million for air and water pollution control and associated environmental health programs. A request is being submitted to the State Legislature for \$5 million, of which \$1.5 million will be used as grants-in-aid to County Health Departments to be used for local programs. The balance will go for state-supported projects. The additional \$1.5 million is to be requested through local matching funds by the State Board of Health.

A total of \$345,400 has been requested for the Bureau of Sanitary Engineering for air pollution control in the current biennium. Approximately \$840,000 is being requested for the 1967-69 biennium. The State Board of Health is seeking \$100,000 in the budget for construction of additional facilities at the Winter Haven station.

Equipment for air pollution control has a high price tag. The demands for trained personnel in this discipline considerably exceed the supply. The competition is fierce and the situation is getting worse. The State Board of Health has acute difficulty in obtaining qualified engineers because the salary schedule set under state regulations is not competitive with the Federal Government and private industry.³⁶ At the present time the air pollution control program has a staff of 17 persons. When a vacancy occurs, it is extremely difficult to recruit qualified personnel to fill it. Under the expanding program for air pollution control, the State Board of Health is budgeting for 26 new positions.

Legal Action by the State Board of Health

Below are some of the more than 19 legal actions taken by the State Board of Health on behalf of the citizens of Florida since 1958 in relation to air pollution control. Some of these cases were dismissed by the court; others were dropped because in the opinion of the solicitor "prosecution was not justified"; other cases were not pressed because efforts were made by the offending

³⁶ *Op. Cit.* Patton, Vincent D.

companies or municipalities to correct the situations before the cases went to court.

State Board of Health vs. Armour and Company

Air pollution at Ft. Meade plant prior to March 5, 1963, following severe air inversion condition was alleged to cause nose bleed and defoliation of vegetation in Ft. Meade area. This was linked to the company failing to construct a phosphate plant with approved air pollution control devices. An injunction was sought to stop plant operations until air pollution control devices were installed. **DISPOSITION:** The court allowed continued operation of plant and continued this case for 120 days to allow company to install adequate approved control devices, after which case was dismissed.

State Board of Health vs. International Minerals and Chemical Corporation

Air pollution was from the Prairie plant, January 5, 1965. Violation of Air Pollution Control Commission rule requiring adequate control measures during operations which company had failed to install and operate. Case presented before Commission in an administrative proceeding. **DISPOSITION:** Final order required compliance by October 1, 1965; company complied with order and case dismissed.

State Board of Health vs. the City of Dania

Air pollution condition caused by open burning of city garbage dump. Upon commitments of the City to correct the situation, case dismissed after one year.

Health and Economic Factors

Some segments of the population are interested in air pollution because it soils or damages the paint on their homes. This condition also interferes with the proper growth of certain ornamental plants and shrubs. Other people seek the abatement of air pollution primarily because they are tired of brushing soot

off the sill every time they open a window for a breath of more-or-less fresh air.

Others seek an end to air pollution because their citrus groves will not flourish or because their cattle will not grow properly in an atmosphere contaminated with certain fluorides or oxides. Some people, such as city planners, airline pilots and farmers, seek an end to air pollution because it interferes with the proper performance of their professions.

There are many who seek an end to air pollution because they don't like the odors that assail them where they live or work; and many are chagrined because the mountains or the forests or other aesthetic delights that they enjoyed as children are now obscured by a blanket of smog on too many days of the year.

Each of these individuals has good reasons for wanting to see the myriad sources of air pollution abated. The primary reason they favor control is that air pollution threatens human health. The threat to health constitutes the primary impulse for the control of air pollution by the State Board of Health and the Federal Government.³⁷

While air pollution is a health factor, the control of air pollution is also an economic factor. The cost of research, the installation and operation of devices runs into millions of dollars. By January 1, 1966, the phosphate industry had spent \$22.7 million on research, development and installation of air pollution control equipment. In addition, equipment valued at \$6 million is either on order or being installed and the annual operating cost is slightly in excess of \$3 million.³⁸ But industries which have pollution potentials must assume their responsibilities for polluting the air that people breathe and initiate steps to prevent this contamination. Prevention can be either through control of pollution at its source, such as the result of a manufacturing process, or through proper engineering of products sold to the

37. *Op. Cit.* Stewart, William H.

38. *Op. Cit.* Patton, Vincent D.

consumer, such as automobiles, which add considerably to the problem.

Part of the answer to air pollution control is zoning but the State Board of Health has no authority in this field. Areas zoned for heavy industry and residences should have a buffer zone of light industry and commercial establishments between them. This would keep noise, smoke, heat, vibrations and particulate and gaseous pollution emissions from greatly affecting residential areas. Planning and zoning are still in their infancy and while most of the incorporated towns and cities have some type of zoning, only a few counties have zoning in unincorporated areas. A special act of the Legislature is needed before a county can adopt zoning laws.

The Surgeon General of the U. S. Public Health Service has noted, "Air pollution officials find themselves in a particularly difficult position. In recent years the ground has shifted beneath their feet. Efforts which were regarded as acceptable just a few years ago are now considered inadequate. They are being asked to shift gears very rapidly. In order to do so productively, they cannot continue to follow stereotyped patterns which may have served them well in the past but which are no longer adequate to the challenges ahead. Today, air pollution control officials confront the problems of a computerized automated space age but they are still armed for the most part, with the weapons of yesterday."³⁹

Air pollution is a problem in certain areas of Florida. The largest and most persistently troubled spot is the Polk-Hillsborough District which has had national and international notoriety but there are other pockets of air pollution which could become increasingly damaging to the Sunshine State's image. Air pollution not only affects the health of Florida's citizens but it hurts the economic wealth of the state. The people of Florida need to look at the situation now and arm the State Board of Health with the tools and resources which it has asked for to meet the challenges of tomorrow.

39. *Op. Cit.* Stewart, William H.

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APPENDIX A

"The Health Effects of Air Pollution in Polk County"

APPENDIX A

THE HEALTH EFFECTS OF AIR POLLUTION IN POLK COUNTY

by

Albert V. Hardy, M.D., Dr. P.H., Director, Bureau of Research,
Florida State Board of Health

Charlton Prather, M.D., M.P.H., Assistant Director, Bureau of
Preventable Diseases, Florida State Board of Health

Beginning in March 1966, pages of identical petitions addressed to the Florida State Board of Health and the Florida Air Pollution Control Commission were received by Mr. Vince Patton, Secretary, Florida Air Pollution Control Commission. The last 12 sheets, each with 21 signatures, were received in early July. Counting both the Mr. and Mrs. included in one signature, there were 4631 names on these petitions. There were in all approximately 4000 signatures representing about 3000 families.

The complaints in the petition were broad and included a general request for relief. It was worded as follows:

"Gentlemen: We respectfully request that you take immediate and resolute action to prevent and abate the acid gases, fumes, chemicals, and toxic particles which are continuously being spilled into the air in the Polk-Hillsborough Air Pollution Control District, at an enormous rate, especially in the Western Part of Polk County. We do not know what steps should be taken to control this serious menace. However, as experts on air pollution and charged with the responsibility under the laws of this State of Florida to control it, we respectfully request your help."

There was no indication as to the specific harmful effects of "this serious menace" as conceived by the signers. Hence, the State Health Officer directed the Bureau of Research and the Division of Epidemiology of the State Board of Health to determine the extent to which air pollution did damage the health or impair the comfort of individuals signing this petition. This is the report of findings:

More precise information from the signers was essential. The petition provided names and addresses but the latter were com-

monly incomplete and many signatures were difficult or impossible to read. Using available directories, secretaries in the Polk County Health Department clarified names and completed addresses insofar as possible. The purpose was to contact by mail a 1000 family sample of the petitioners. As a trial run, each fiftieth signer was contacted. Next all with two signatures per family were mailed the questionnaire, the remainder were those with one name per address. To reach the 1000 virtually all usable household addresses had to be included. Other than omitting odd and presumed fictitious groups of names, there was no selection except that based on the readability of names and adequacy of address. None of those families whose names were on petitions received in July were contacted. The geographic distribution of the sample compared closely with that of all addresses on the petition.

The letter of request and the one page questionnaire employed are attached to this report. Attention was directed particularly to the effects of the "irritating and toxic" pollutants on the health of the petitioner and his family. The first question was "Within the past 12 months have you or another member of your household suffered any personal annoyance, irritation, or health effects related to air pollution?" This was to be answered by circling "yes," "no," or "don't know." For those answering "yes," the further questions called for identification of name(s) of family member(s) affected. A description of the annoyance, irritation or health effect was requested with dates and places of occurrence as exactly as possible. If a physician had been consulted the questionnaire called for his name, address and an authorization for him to give further information on the medical condition to a representative of the Board of Health.

This inquiry, a self-addressed postage prepaid envelope included, elicited a response from 195 (19.5%) of the 1000 contacted (Table 1). The post office returned an additional 38 with the stamped information that the addressee was unknown, had moved and left no address, or that there was no such street or street number. The responses came slowly. After more than two months a follow-up letter was sent to each fourth nonrespondent, i.e., to 192 of the 767 nonrespondents. To this communication 30 (15.6%) replied (and nine envelopes were returned "addresses unknown"). Thereafter with the aid of the Polk County Health Department staff there was an intensive effort to reach the 153 who failed to respond to the follow-up communication. The permanent residents were interviewed. When it was determined that the signers of the petition were apparently temporary residents, predominantly winter guests, the follow-up efforts were stopped.

VOLUNTEERED COMMENTS ON HOW SIGNATURES WERE PROCURED

There was no inquiry designed to ascertain the circumstances under which individuals signed this petition. The information received was volunteered. Undoubtedly many signed from deep conviction but there was ample evidence that this was not always the case. The following are illustrative comments:

1. "I signed the petition because of a personal request of a friend and as far as I know, I have had no personal injury. I feel the program of control is well handled and a great deal of progress has been made."

2. "I am sorry about this matter. I was mis-informed. My husband works for one of the phosphate plants (which was designated) for 21 years. The mine has been our bread and butter. We have not been harmed in any way mentioned above. Thank you. P.S. The dust does get pretty bad."

3. "I signed the petition to get away from a very persistent woman. This won't happen again and if possible I would like to get my name removed from said petition."

4. "My husband signed this petition against his better judgment one day at Sears Town Shopping Center. Some woman just wouldn't take no for an answer. We know nothing about pollution in our area."

5. "Having signed the referred to petition on the spur of the moment without a second thought, I would appreciate very much having my name removed from said petition. Thank you."

6. "A petition was in the office of the park where I live in the winter. They were asking all to sign it and it seemed like a good idea."

7. "I don't remember signing the petition."

8. "I refused to sign this petition and so did my wife. We have no complaints."

9. "I am not aware of signing any such petition. I have no idea of what this is all about."

10. "I know nothing about this request and wish I had a photostat copy of my name if it was in handwriting on that petition. Thank you kindly for writing me."

Several replies stated the petition was signed for reasons other than health, as for example:

1. "My interest in signing the petition related to damage being done to citrus and cattle in our area and in no wise did we have in mind human danger."

2. "My signature was affixed to the petition mentioned through my interest in agriculture, not from the personal health hazard aspect."

In reviewing these petitions an alert secretary found that there were instances of repetition of the same signature. She noted one name on five different sheets. There were occasional groups of very odd names suggesting playful actions. In an individual follow-up in the home, a ten-year-old child said she signed at school because the teacher told her to do so. These observations are reported to provide a perspective for weighing the significance of the large number of signatures on these petitions.

FINDINGS

It is recognized that the observations to be reported are not the findings on a representative sample of the population. As indicated above, varying motives and circumstances caused individuals to add their names to the petition. However, those most likely to sign were individuals concerned about air pollution in the area, and particularly those who believed they were personally affected by it. Thus, the findings would reveal the occurrence and nature of health problems attributed by the petitioners to air pollution. However, the indicated magnitude of the problem among them would not be a measure of that for the population as a whole. The purpose of the study was to ascertain the nature and frequency of the complaints and to collect evidence as to the probable relation to air pollution.

There was a striking difference in the information provided in the responses to the first and second mailings and in the personal contacts by phone and home visits (Table 2). Of the 195 who responded to the first mailing, 123 (63%) had complaints, approximately two-thirds specifically related to health. From the second mailing to the sample of 192 nonrespondents, four (13%) of 30 responses cited complaints. During the individual follow-up, there were only two (3%) complaints from 78 residents who were contacted and provided information. Furthermore, complaints received in the responses to the second mailing and those stated in the interviews during the individual follow-up were less troublesome than those reported in the answers to the first mailing.

Table 3 summarizes the statistical distribution of observations. The numbers are based on a direct count of the returns to the first mailing to the 1000 families together with the actual numbers on the 25% sample of nonrespondents multiplied by four. While 14.7% had complaints, 49.6% had no complaints. It was determined that 15.6% of those who signed the petition but failed to answer communications were winter residents, and an additional 14.1% were unknown at the address given and are presumed to be transients or temporary residents. There was emphatic assertion by 2.4% that the petition had not been signed by them. Of those contacted individually 1.2% promised to provide the information by mail but have failed to do so and 1.2% refused to answer questions. Death had occurred in 0.4% of the petitioners.

The complaints varied in degree. For descriptive purposes the annoyance and irritations were separated from the more definite complaints related to health. For the groups as a whole, 8.8% considered that their health had been impaired; an additional 5.9% considered they were otherwise affected by air pollution.

Members of one group complained in a strikingly uniform manner. Predominantly these were residents, and chiefly winter residents, in large trailer courts. They directed their complaints to one plant which was repeatedly named. Illustrative comments follow:

1. "When the Kraft plant is operating, the emission from their smoke stack coats everything with oily, sooty, type substance which must be washed off every day."

2. "There is the annoyance of having black, sticky, oily particles all over the mobile home, automobile and porch furniture. Constantly having to wash windows, house and car is irritating to older people and this no doubt affects their health."

3. "I live close to the Kraft plant and the black soot covers everything. It is annoying but I have not been affected in any way I know of."

4. "Pollution must be harmful as it produces sneezing when dust is wiped from furniture."

5. "Surely with the odor as well as black oily particles it is not healthy. Who knows how long it will take to have permanent effect on your health?"

In marked contrast with the frequency of mention of Kraft, a specific phosphate plant was named in only three responses. However, complaints apparently related to the industry as a whole

commonly specified significant eye or respiratory tract symptoms. Burning of the eyes, irritation of the nose and throat, and excessive coughing were mentioned frequently. Symptoms of an asthmatic nature or an aggravation of asthma appeared to be particularly troublesome. Sinus trouble and post-nasal drip were cited repeatedly. Episodes of nose bleeding were of concern, particularly in one school. Symptoms related to arthritis were mentioned occasionally. An aggravation of emphysema from the air pollution was considered to be "very bad." The following are illustrative of the health complaints specified: "Throat and nose irritation causing sinusitis and coughing which in turn caused aching joints, low blood and anemia"; "Stinging sensation in nose and throat—bad odor"; "Throat irritation, coughing interferes with breathing, unpleasant odor"; "I have emphysema and when the wind is from the West I almost choke to death. I have to go to the hospital"; "A heavy pall of smoke causes burning of eyes and throat"; "Noticed choking sensation when air has a visible fog from nearby phosphate operation"; "Fumes irritate eyes and mucous membranes of nasal and throat passages"; "Irritation of nose and lungs and sinuses on days when low clouds and humidity keep phosphate particles low to the ground."

The questionnaire inquired as to the date and place of occurrence of symptoms. With only a few exceptions no information was provided. When this was answered the information tended to be very general as "many times," "off and on," "before Christmas" or "past several months." The specific dates given did not cluster sufficiently to point to a precise day or a particular month. However, there were instances where both a day and hour were stated. The indefinite responses may reflect only the uncertainties of memory of past events.

The geographic distribution of all signers of the petition, of the sample mailed the questionnaire, and of those specifying complaints considered related to air pollution is given in Table 4. The distribution of the sample and of the total, corresponded satisfactorily. The percentage of those queried and of those citing complaints varied only slightly in the Lakeland-Bartow communities. It was a little lower in Hillsborough (chiefly the eastern area) but substantially lower in Winter Haven and Highlands City areas. There were no complaints from the few queried who lived in East Polk County or outside of Polk and Hillsborough Counties. One out-of-state resident forwarded an unsolicited letter of complaint. The percentage of replies with complaints is shown further in Table 5.

Of 30 petitioners who had consulted a physician, 28 gave permission for their doctor to furnish information. Eleven physicians were involved; all were contacted. Opinions on the role of air pollution in 25 cases were given. In one community, one of the physicians was convinced the air pollution was a very significant contributor to the complaints of 11 of his patients. However, a fellow practitioner in the same community did not attribute symptoms in his cases to this cause. One physician clearly identified the cause of asthmatic attacks in one patient as pollution derived from fogging for mosquito control. Another had a patient whose symptoms he related to air pollution from industrial sources. In the other 12 cases in which medical opinions were expressed, it was concluded that in five symptoms might be related and seven were unrelated to air pollution.

The difficulty of evaluating the causal relationship of air pollution to morbidity is widely acknowledged. Most of the symptoms are those which occur with greater or lesser frequency in every community. Those reporting believed these to be aggravated by air pollution. Conclusive proof would require dependable data from comparable population groups with and without exposure to air pollution, a rarely attainable situation. Investigators from the University of Cincinnati who are devoting intensive attention to the problem report in the August 1966 issue of **Archives of Environmental Health**. Their introductory statement is "Of the many difficult epidemiological undertakings of recent years the more ambitious have been attempts to establish possible effects on health of varying levels of air pollution and different types of pollutants found in the atmosphere of American cities." Their studies were conducted in Cincinnati and Los Angeles. However, the reported findings related only to Los Angeles since, as they say, "The air pollution and morbidity data from Los Angeles provided a large enough population base to bring the study to a successful conclusion." The lack of conclusive medical evidence from studies in much smaller communities might therefore be anticipated.

In the effort to be objective in weighing information, one must recognize the tendency of complainants to attribute the deed to a suspect culprit. In the health field this was reflected by one petitioner who stated that due to air pollution she had "been unable to sleep with windows open at night—have air conditioned our house for more restful nights." Another reported a salesman's charge of damage by air pollution: "I bought carpeting. It faded. I complained to the dealer so a representative of the company came to see about it. He said it was due to the fumes from the phosphate industries and gave me a big talk about chemical reaction, etc. I bought a new rug from another company to replace

it—so it cost me extra money. We'll see what happens to it." This respondent at least was willing to wait for confirmatory evidence.

POSSIBLE ROLE OF VARIOUS POLLUTANTS ON HEALTH

On two previous occasions substantial studies to ascertain the health effects of air pollution in Polk County have been encouraged or conducted by the Board of Health. In one the Public Health Committee of the Polk County Medical Society requested the practitioners to provide the names of patients with symptoms possibly due to air pollution. These patients were invited to present themselves for additional examination. The report stated the conclusion that after extensive investigation of fluoride intoxication in humans in Polk County, the Public Health Committee of the Polk County Medical Society found no evidence of any harmful effects. The condition of the teeth is a particularly sensitive index of possible exposure to increased amounts of fluorides. Hence, 2539 children in four schools were given special dental examinations, three in West Polk County and a control school in the eastern part of the county. Only two children with very mild and one with mild mottling considered related to fluoride intake were found. The proportion with caries was the same in the three communities exposed to air pollution and in the one control community. It was concluded there was no significant evidence of either harmful or beneficial effects of fluorides due to air pollution in Polk County.

The nature of the prominent symptoms cited, notably irritation of eyes, nose and throat, and aggravation of sinusitis, asthma and the manifestations of emphysema points to a causal relationship with chemical irritants such as the sulfur oxides. Evidence accumulated in this study is suggestive.

CONCLUSIONS:

Despite uncertainties in the evidence and in the interpretation of it, we must conclude that, at least, 14.7, per cent of a family sample of 1000 petitioners on air pollution in Polk-Hillsborough Counties felt they had been annoyed or injured by air pollution in the preceding 12 months. This is a significant problem of mental health and tranquility, if no other. Attempts to assess actual physical damage from air pollution are fraught with great difficulties in the best designed studies and there were no exceptions to this in the present one. Few of the complaining petitioners had sought medical attention for their symptoms and of those who had had such attention, the physicians' impressions were that 13 of the 28 could be related in some way to atmospheric

pollution. This association of air pollution with actual physical damage, though not completely verified, cannot be ignored. The nature of the complaints of the petitioners and their geographic location of residence, make it a reasonable assumption the symptoms were related to air pollution episodes with irritant chemicals of which the sulfur oxides or oily soots were the most likely air contaminants.

This problem has been of continuing concern to the Florida State Board of Health. The maintenance of an environment conducive to good health is one of the multiple reasons for seeking more rapid control of air pollution in the Polk-Hillsborough area of central Florida and in any other area of Florida with similar problems.

It has been concluded further by Dr. Wilson Sowder, State Health Officer, that the retrospective evidence on the health effects of air pollution in the Polk-Hillsborough Air Pollution District indicates the need for more definitive prospective observations. He has directed that continuing studies of this type be planned and has assured that appropriate field assistance can be made available. He has expressed the hope also that the Polk County Health Department may soon have the leadership of a highly competent health officer who would be an essential team member in such a study. Prompt reporting of symptoms believed due to air pollution will be required. Dr. Sowder urges the continued interest and participation of concerned citizens in the Polk-Hillsborough Air Pollution Control District.

TABLE 1

CLASSIFICATION OF FAMILY RESPONDENTS
POLK COUNTY AIR POLLUTION INVESTIGATION, 1966

Original mailing	1000	
Responses	195	(19.5%)
Returned undelivered	38	(3.8%)
Nonrespondents	767	
Second mailing (1.4 sample)	192	
Mail responses	30	(15.6%)
Returned undelivered	9	(4.7%)
Follow-up by phone and home visits	153	

TABLE 2

RESPONSES ON FIRST AND SECOND MAILING
AND ON FAMILY FOLLOW-UP POLK COUNTY
AIR POLLUTION INVESTIGATION, 1966

Returns from original mailing		195
No complaints		72
Complaints		123
Annoyance or irritation	39	
Health effects	84	
Other		38
Returns from second mailing		39
No complaints		26
Complaints		4
Annoyance or irritation	4	
Health effects	0	
Other		9
Individual follow-up		
No complaints		76
Complaints		2
Annoyance or irritation	1	
Health effects	1	
Other		75

TABLE 3

DISTRIBUTION OF OBSERVATIONS
BASED ON SAMPLES STUDIED
POLK COUNTY AIR POLLUTION INVESTIGATION, 1966*

	Number	Per cent
Total sample, families	1000	100
No complaints	504	50.4
Complaints	147	14.7
Annoyance or irritation 59 (5.9%)		
Health effects 88 (8.8%)		
Winter guests	156	15.6
Presumed temporary residents	141	14.1
Did not sign	24	2.4
Information promised by mail	12	1.2
Information refused	12	1.2
Dead	4	0.4

*Numbers based on first returns from mailings to the 1000 families together with the follow-up observations on the 25 per cent sample of nonrespondents.

TABLE 4

PERCENTAGE DISTRIBUTION OF FAMILY RESPONDENTS
BY GEOGRAPHIC AREAS
POLK COUNTY AIR POLLUTION INVESTIGATION, 1966

Area	Total Signers	Sample	Replies with Complaints
Lakeland City	37.1	37.9	43.0
Lakeland Rural	5.8	6.9	6.3
Lakeland Mobile Homes	20.5	20.2	22.5
Bartow Area	13.8	16.9	17.6
Winter Haven Area	6.3	4.7	1.4
Highlands City	3.0	2.7	1.4
East Polk County	1.3	.7	0
Hillsborough County	8.6	9.2	7.7
Elsewhere	3.5	1.7	0
TOTAL NUMBERS	4631	1000	142

TABLE 5

PERCENTAGE OF REPLIES WITH COMPLAINTS
POLK COUNTY AIR POLLUTION INVESTIGATION, 1966

Lakeland City	14.8
Lakeland Rural	13.8
Lakeland Mobile Homes	14.5
Bartow Area	13.6
Highlands City	6.9
Winter Haven	3.9
East Polk County	0
Hillsborough County	10.9
Elsewhere	0

FLORIDA STATE BOARD OF HEALTH

Wilson T. Sowder, M. D., M.P.H., State Health Officer
Malcolm J. Ford, M.D., M.P.H., Deputy State Health Officer
Jacksonville, 32201

BUREAU OF RESEARCH

Albert V. Hardy, M.D., Dr.P.H.
Assistant State Health Officer
and Bureau Director

We have the petition signed by you and addressed to the Florida State Board of Health and the Florida Air Pollution Control Commission. By your signature you ask that these agencies "take immediate and resolute action to prevent and abate the acid gases, fumes, chemicals and toxic particles which are continuously being spilled into the air—at an enormous rate." We are asking your further assistance in providing evidence which may aid in identifying the sources, distribution and time of occurrence of pollution by these irritating and toxic substances, and the effects of these on you and your health.

You are one of a representative sample of those persons signing the petition who is being requested to furnish more information. Your cooperation in completing the attached questionnaire and returning it promptly will aid the State Board of Health. Your response will be regarded as confidential. Thank you.

Sincerely,

Albert V. Hardy, M.D.
Director, Bureau of Research

Charlton Prather, M.D.
Asst. Director, Bureau
of Preventable Diseases

AVH:ew
enc.

APPENDIX B

- (1) Letter from Wilson T. Sowder, M.D., Florida State Health Officer, to H. B. Cottrell, M.D., Regional Health Director, U. S. Public Health Service, Region IV.
- (2) Letter from Howard W. Chapman, Associate Regional Health Director of Environmental Health Services, U. S. Public Health Service, Region IV, to Wilson T. Sowder, M.D., Florida State Health Officer.

APPENDIX B (1)

August 12, 1966

H. B. Cottrell, M.D.
Regional Health Director
U. S. Public Health Service—Region IV
50 Seventh St., N.E.
Atlanta, Georgia 30323

ATTENTION: Mr. Howard Chapman

Dear Doctor Cottrell:

Enclosed is a copy of a recent memo of mine concerning the Florida State Board of Health's interest in an improved public information program, especially on air and water pollution control programs. I am bringing this to your attention because I think it would be helpful to the Florida State Board of Health to obtain your thoughts and assistance on this matter.

In particular, I would like to request a very brief report comparing Florida pollution problems and control programs to other states in your region or perhaps to the rest of the country. If you can meet this request, I think you would satisfy our needs by limiting your response to an evaluation and comments on materials, information, and impressions you already have on hand. I know this may restrict you to making only general observations; however, I do not believe our situation or public information purposes warrant anything more than that at this time. Your permission to publicly quote any of the comments you may be able to send will be appreciated.

Sincerely,

Wilson T. Sowder, M.D.
State Health Officer

WTS:mw
Enc.

APPENDIX B (2)

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Regional Office

Rm. 404, 50 Seventh Street, N. E.
Atlanta, Georgia 30323

September 6, 1966

Dr. Wilson T. Sowder
State Health Officer
State Board of Health
Jacksonville, Florida 32201

Dear Dr. Sowder:

This is in regard to your letter of August 12 to Dr. Cottrell, requesting a brief report on Florida's water and air pollution problems and control program. Enclosed with your letter was a copy of your July 28 memorandum to County Health Officers, etc., on "Information Program and Legislative and Budgetary Proposals on Air and Water Pollution Control Programs," and a copy of the proposed act "State Environmental Control Act."

To comply with your request it is necessary to treat air and water pollution separately, as follows:

Water Pollution

In general, the Florida State Board of Health has done an excellent job in obtaining treatment of wastes from municipalities. The statistics on the number of municipal waste treatment plants built in the State of Florida during the last few years are, indeed, most impressive. During the period 1961 through 1965, 1003 separate treatment plants were approved for construction. No State within this Region, and only a few nationally, have had the rate of population growth and urban expansion, with its accompanying municipal waste problem, as has Florida.

The State Board of Health has carried out some extensive studies on special local water pollution problems such as those associated with the phosphate industry. These studies are commendable, but staff resources should be available to cover all industrial wastes and stream problems in the State.

One of the real glaring weaknesses in Florida is State law which exempts certain industrial areas from pollution control. No State in the Southeast has similar exemptions in its law. Also, as in other States, Florida has serious pollution problems relating to the larger municipalities such as Jacksonville and Miami.

In the "Staffing and Budgetary Guidelines for State Water Pollution Control Agencies," prepared by the Public Administrative Services, Chicago, Illinois, (see enclosed copy) it is suggested that Florida have a minimum staff of 58 persons, but a staff of 93 persons for its water pollution control program would be more desirable. To support this staff a minimum annual budget of \$528,000 would be required, and a desirable budget of \$847,000. Florida's present staff and budget is less than one-half of the minimum recommended.

The Florida State Board of Health has an effective water pollution control program which has done much to control or minimize pollution in the State. However, to cope with the pollution problems associated with population growth, urban and industrial expansion, etc., the following is needed:

1. Strong legislation providing all the authority needed to do a complete job.
2. Adequate budget and staff.
3. Initiate long-range planning for water pollution control which includes a comprehensive approach for stream studies and abatement of pollution from all municipalities and industries.

Air Pollution

Based on 1965 data, the Florida State Board of Health spent approximately \$176,000 for air pollution activities or approximately 3.5 cents per capita per year. The average in 35 states during the same year was 4 cents. However, this comparison of Florida with other states is somewhat misleading since approximately \$146,000 of the \$176,000 was spent in the Polk-Hillsborough-District, leaving only \$30,000 for the remainder of the State. Therefore, the per capita per year expenditure in the Polk-Hillsborough District was about 23.4 cents, and the remainder of the State 0.6 cents. If Polk-Hillsborough District is considered a "local" program, the expenditure of 23.4 cents per capita compares favorably with the 1965 average of 22.6 cents for 130 local programs. Obviously, the 0.6 cents per capita for the states activities is much below the national average of 4 cents. In general, a comprehensive state air pollution program that includes studies, technical assistance to local programs, plan review and approval, and enforcement authority should have a minimum budget of from 2-5 cents per capita per year.

Unquestionably, the State program and activities in the Polk-Hillsborough District have effectively reduced air pollution emissions in this area. This has been accomplished even though there has been a tremendous expansion of the phosphate rock processing industry within the last eight years. It is generally agreed, however, that the air pollution problems are not completely resolved and much additional effort is needed. The Florida State Board of Health is fortunate in having on its staff engineers who are nationally recognized for their expertness in the field of air pollution control from phosphate rock processing operations.

I would like to comment briefly on the proposal for \$1,000,000 in grants for local air and water pollution control programs, as well as the proposal to shift \$500,000 from the State program to the local program—providing, in all, \$1,500,000 for local activities.

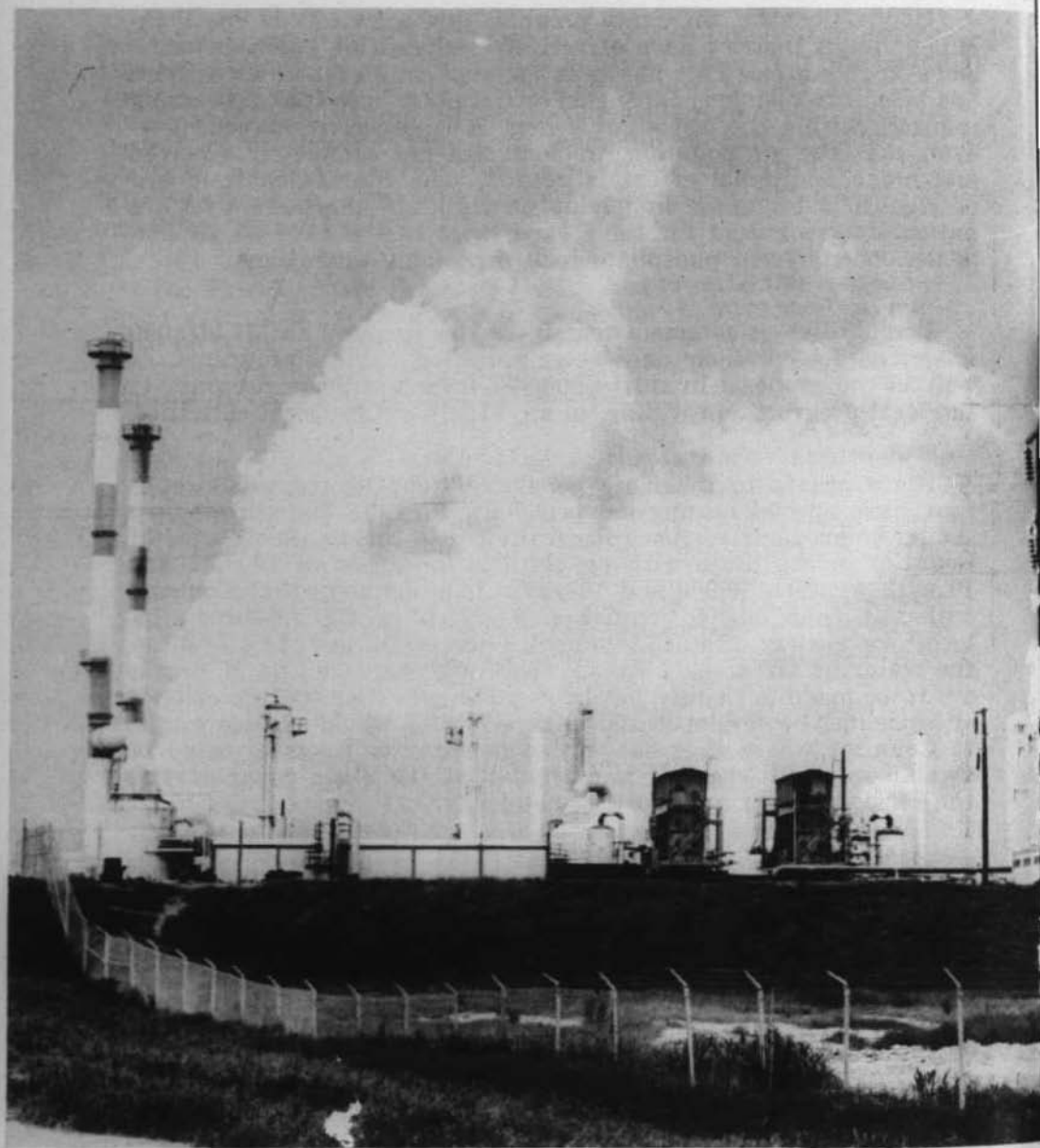
State grants to the more populated Counties, or to Counties that have special or unusual problems, may be appropriate and should be productive. According to the 1960 census, there were 11 Counties in the State with populations in excess of 100,000 and 10 with between 50,000 and 100,000. It is doubtful that Counties with less than 50,000 population would have the resources, interest, or variety of staff to mount a successful program in either the water or air area. I would, therefore, suggest that if grants are to be made to County health departments that specific criteria or guidelines be developed and followed which would exclude grants to Counties where it is doubtful a meaningful program could be established, and where it is evident that the State could provide the services better and more economically.

In addition, it is imperative to have a clear understanding of the State and County health department roles. The local program should supplement and compliment the State's program. The State program should continue to have the responsibility for laboratory services, setting of standards, provision of expert technical services, comprehensive long-range planning and enforcement.

Sincerely yours,

Howard W. Chapman
Associate Regional Health Director
for Environmental Health Services

Enclosure



These stacks at a chemical plant in Polk County are equipped with devices at the top to help cut down air pollution. The plume seen may be vapor from other part of the plant.

FLORIDA HEALTH NOTES



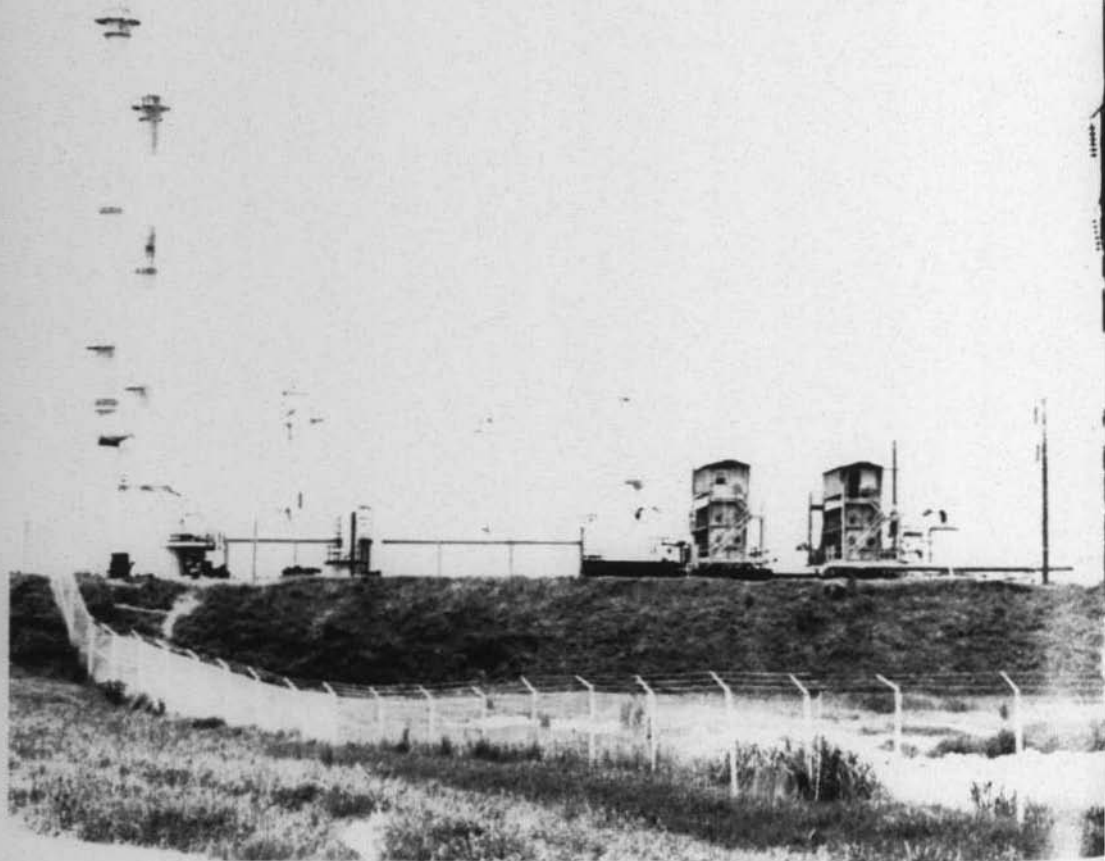
VOLUME 59 — NO. 3

MARCH

1967

*Food and
Nutritionists*

FLORIDA STATE LIBRARY



These stacks at a chemical plant in Polk County are equipped with devices at the top to help cut down air pollution. The plume seen may be vapor from other part of the plant.

FLORIDA HEALTH NOTES



VOLUME 59 — NO. 3

MARCH 1967

*Food and
Nutritionists*

FLORIDA STATE UNIVERSITY

(Cover photo) Fruit and vegetable cartoons, made by a nutritionist, enthrall a class of children in a Florida school.



A State Board of Health nutrition consultant teaches a class of expectant mothers about proper diets. Among the various activities carried on, nutritionists . . .

FOOD and Nutritionists

It is true "You are what you eat!"

Everything in your body was once taken in as food. Foods consumed are changed by chemical processes into blood, muscles, bones, teeth, hair and skin. Food is converted into energy. Food becomes hormones that regulate body processes and the antibodies that fight infections. Food is used to make the material to clot blood and to rebuild and repair tissue. And food provides the body with energy for work and play. Your choice of foods can provide enough of the right materials for body building and carrying out body functions.

For well-being, the body must be supplied with sufficient quantities of the 40 odd nutrients essential for health. Carbohydrates, protein, fat, calcium and iron are the major nutrients. A large number of other minerals and vitamins are essential in smaller amounts.

If you are poorly nourished because of insufficient food or your body has not the ability to use food properly, you may lack stature, stamina and enthusiasm for life. Two-thirds of the world's population does not have enough food to eat. Many millions are on the edge of starvation because of worn-out soil, ignorance, poor land management, greed on the part of fellow countrymen, the black market or expansion of the population. In the United States, resources are available. You merely have to select from some 5000 food items in the markets to get the best food values.

(Cover photo) Fruit and vegetable cartoons, made by a nutritionist, enthrall a class of children in a Florida school.



A State Board of Health nutrition consultant teaches a class of expectant mothers about proper diets. Among the various activities carried on, nutritionists . . .

FOOD and Nutritionists

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This issue of **Florida Health Notes** tells you about the foods you should eat each day, diet fads, nutritional services given mothers, children, the elderly and low-income families, and the work of the nutrition consultants of the State Board of Health and County Health Departments.

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Florida Food and Nutrition

Florida leads the nation in producing the foods that supply many nutrients essential to life, growth and health. Oranges supply the daily vitamin C on breakfast tables throughout the United States. Fresh vegetables provide essential vitamins and minerals in the meals of families in many of our northern states. Protein, required for life itself and growth of the young, comes from Florida's beef, seafood, poultry and dairy products.

How about our own people of Florida? How well nourished are they? Nutrition consultants from the State Board of Health's Division of Nutrition have learned that migrant workers who harvest

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VOLUME 59—NO. 3

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Nutritionists advise mothers of overweight children and pregnant women who are gaining too much weight; speak to groups of just plain fat adults; and counsel persons with diabetes, heart diseases and a myriad of other chronic conditions which are aggravated by the burden of excess fat.

Obesity is a body condition marked by the storage of much fat which is hard to carry around. It often is related during pregnancy to toxemia, complications during labor and stillbirths. The condition is also associated with an increased number of respiratory difficulties, more high blood pressure and coronary heart disease, susceptibility to diabetes and greater risk under surgery. It has been estimated that about 20 per cent of adult Americans are overweight to a degree that it poses a hazard to health and long life.

Medical authorities today are concerned about heart disease as the number one killer in the United States. The fat in our diets has



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been suggested as having a relationship to heart disease. This is an area still being studied by medical and nutritional scientists.

Nutritional anemias frequently noted by physicians result from diets lacking protein, iron and vitamin C. This condition is of particular concern when found among expectant mothers and young children. Dental caries (tooth decay) are reported by public health dentists and considered to be associated with diets high in refined sugar. Dentists also observe gum conditions which can be improved by increasing the amount of vitamin C in the diet.

The Foods to Eat

No one food contains all of the nutrients in the amount you need. Yet most foods do contain more than one nutrient. The key to good nutrition for most people is to choose a variety of foods that supply the vital nutrients in the required amounts. All of these foods are available in Florida markets and familiar to most people. The major portion of the daily diet should be selected every day from the four food groups.

These food groups with recommended daily servings are:

MEAT GROUP

Two or more servings

Beef, veal, lamb, pork, variety meats, such as liver, heart and kidney; poultry and eggs, fish and shellfish. As alternates — cooked dry beans, cooked dry peas, nuts, peanuts, peanut butter.

Count as serving: 2 to 3 ounces of lean cooked meat without bone; 2 eggs; 1 cup cooked dry beans or peas; 4 tablespoons peanut butter.

Foods in this group contribute protein needed for growth and repair of body tissues — muscle, organs, blood, skin and hair. These foods also provide iron, thiamine, riboflavin and niacin.

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MILK GROUP

Some milk for everyone

Children under 9 years of age—
2 to 3 cups
Children 9 to 12—3 or more cups
Teenagers—4 or more cups
Adults—2 or more cups
Pregnant women — 3 or more
cups
Nursing mothers — 4 or more
cups

Milk can be fluid, whole, evaporated, skim, dry or buttermilk; Cheese and ice cream may replace part of the milk; 1-inch cube cheddar cheese = $\frac{1}{2}$ cup milk;
 $\frac{1}{2}$ cup cottage cheese = $\frac{1}{3}$ cup milk;
 $\frac{1}{2}$ cup ice cream = $\frac{1}{4}$ cup milk

Milk is the leading source of calcium needed for bones and teeth. It also provides high quality protein, riboflavin, vitamin A and many other nutrients.

VEGETABLE-FRUIT GROUP

Four or more servings

Include — a citrus or other fruit or vegetable; important for vitamin C which is needed for healthy gums and body tissues.

Good source — grapefruit or grapefruit juice; orange or orange juice; cantaloupe, guava, mango, papaya, raw strawberries, broccoli, brussels sprouts, green pepper, sweet red pepper.

A dark green or deep yellow vegetable for vitamin A — at least every other day. Vitamin A is needed for growth, normal vision and healthy condition of the skin. Dark green and deep yellow vegetables and a few fruits; namely, broccoli, cantaloupe, carrots, chard, collards, kale, mango, persimmons, pump-

kin, spinach, sweet potatoes, turnip greens and other dark green leaves.

Fair source — honeydew melon, lemon, tangerine or tangerine juice, watermelon, asparagus, raw cabbage, collards, garden cress, kale, mustard greens, irish potatoes and sweet potatoes cooked in the jacket; tomatoes and tomato juice; turnip greens.

If the food chosen for vitamin C is also a good source of vitamin A, the additional serving of a vitamin A food may be omitted.

The remaining 1 to 3 or more servings may be of any vegetable or fruit. Fruits and vegetables are valuable because of the vitamins and minerals they contain. Count as 1 serving: $\frac{1}{2}$ cup of vegetable or fruit; or a portion as ordinarily served, such as 1 medium apple, banana, orange or potato; half of a medium grapefruit or cantaloupe or the juice of 1 lemon.

BREAD-CEREAL GROUP

Four or more servings

Whole grain, enriched or re-stored. This group includes: breads, cooked cereals, ready-to-eat cereals, cornmeal, crackers, flour, grits, macaroni and spaghetti, noodles, rice, rolled oats, quick breads and other baked goods if made with whole grain or enriched flour.

Count as 1 serving: 1 slice of bread, 1 ounce ready-to-eat cereal, $\frac{1}{2}$ to $\frac{3}{4}$ cup cooked cereal, cornmeal, grits, macaroni, noodles, rice or spaghetti. If no cereals are chosen, add an extra serving of bread or baked goods making 5 servings from this group.

... make and operate exhibits for meetings and conferences ...



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Food in this group furnishes worthwhile amounts of protein, iron, several of the B-complex vitamins and food energy. (Unenriched white breads, flour, grits do not provide the iron and B-complex vitamins.)

OTHER FOODS

To round out meals and satisfy the appetite, people use some foods not specified — butter, margarine, other fats, oils, sugars or unenriched refined grain products. These are often ingredients in baked goods and mixed dishes. Fats, oils and sugars are added to food during preparation or at the table. These foods supply calories and can add to total nutrient in meals. When there is need to restrict calories, these foods should be carefully limited.

With this guide most Floridians who have normal nutritional needs could choose foods to keep them well. But there are people with special health problems, or who, because of limited education or income, need more help.

Changing Eating Habits

You may consider choosing, preparing and eating food a very personal matter. You eat what you like, what you learned to eat as a child, what you can afford to buy, and what you have the skill, energy and kitchen facilities to prepare. Many people do not have the knowledge to make the best choices, others may have the knowledge but lack the motivation. Others have acquired the knowledge and make a determined effort to do their best.

Nutritionists have found that giving nutrition information is only part of their job. They must motivate people to change their selection and preparation of foods. The nutritionist or public health nurse must learn what the patient or family is eating, their cultural background that might influence them to choose certain foods, the money available to buy food and the facilities for storing and preparing foods. They also need to know if the family grows vegetables in a garden, has a fruit tree, likes to fish, or can obtain surplus commodity foods. The nutritionists begin by commending what is good in the family's diet. Most people enjoy talking about themselves and nutritionists try to center the conversation on the family's interests. As the nutritionists talk with the family, they make suggestions for dietary improvements or modifications. Teaching aids, posters, food models and printed materials are used to reinforce the lessons. Diet charts with pictures of foods have been prepared by the State Board of Health for persons who are unable to read well.

Enrichment Laws

Florida does not have a flour and cereal enrichment law as do many states. Florida manufacturers of flour, cereal, cornmeal and grits are not required to replace the iron, thiamine, riboflavin and niacin removed in processing grain for refined flour. However, the Federal Government requires flour shipped interstate to be enriched with these minerals and nutrients.

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Diet Fads and Fallacies

Perhaps no area in health is more rampant with superstitions, folklore and misleading interpretations of new research findings than nutrition and diet. It has been estimated that the American public spends many millions of dollars each year on books with misleading nutrition or health information, diet plans, "health foods," nutrient supplements or reducing pills. Besides the great waste of money, these unsound diet plans are a threat to health. People have died or had their health damaged because they put faith in an ineffective diet and ignored medical advice or did not seek it soon enough. Quacks have claimed special health-giving qualities for a wide variety of foods, including: honey and vinegar, yogurt, blackstrap molasses, wheat germ, organically grown fruits and vegetables and sea water. Nutritious foods, like milk, meat and cereal products, have been condemned. Dietary cures have been claimed for a myriad of diseases, including arthritis, cancer, diabetes, asthma, kidney stones and varicose veins.

Through educational programs, preparation of materials and talks to lay and school groups, public health nutritionists inform the public on the dangers of misleading dietary information.

Nutrition for Mothers and Babies

Nutritionists expend much time and effort on working with expectant mothers since pregnancy is a period of nutritional stress on the mother. The food the mother eats provides the building materials for the new baby and influences his whole future, growth and development.

Nutrition is considered important in the prevention of prematurity and mental retardation. A noted obstetrician recently told Florida health workers that he considered nutrition the major factor influencing the outcome of pregnancy. The nutritionists either counsel mothers who attend County Health Department clinics or provide necessary nutrition information to physicians, nurses or midwives. Special attention is given to mothers who gain

A PUBLIC HEALTH NUTRITIONIST

Requirements:

A bachelor's degree in food and nutrition or dietetics

A postgraduate degree in nutrition is advisable

Membership in the professional dietetic organization is desirable

The State Board of Health offers residency programs for college graduates

Functions:

Applies knowledge of nutrition to public health programs for the promotion of health, prevention of disease and treatment

Conducts or participates in educational programs for professional staff of official and voluntary agencies

Designs, conducts and participates in dietary and nutrition studies

Prepares and evaluates dietary educational material

Cooperates with other agencies in nutrition programs for professional and lay groups

Works with:

Other public health personnel, teachers, school lunchroom personnel, dentists, physicians

Individual patients, lay groups, schools and colleges

The State Board of Health and County Health Departments have 21 nutritionists working throughout the state at the present time.

too much weight, have high blood pressure, have a nutritional anemia, or some other complicated condition which may be corrected by diet.

Mothers attending clinics often enjoy group sessions and learn to change eating habits by sharing experiences with each other. A nutritionist working in a Brevard County clinic was disappointed at the lack of interest in the lesson she had prepared. At the next clinic she sat down in a corner and invited the women to join the

group only if they were interested in learning what to eat to have a healthy baby. The majority of the women responded and proved to be a more receptive audience.

High quality maternity care in Florida is given impetus through five new Maternity and Infant Care Projects serving 17 counties. Each of these projects employs at least one full-time nutritionist who under physicians' direction counsels and teaches mothers what to eat during pregnancy and how to feed their infants.



... call on mothers and children in their homes (with a public health nurse who is not shown) to help plan better diets ...

Help for Children

Counseling on child feeding is one of the cornerstones of continuous health supervision of infants and children. Insufficient amounts of vitamins A and C, iron, protein and calcium are noted in family meals and present a challenge to public health workers, particularly when working with families with limited food budgets. Many mothers need advice on how to start their children in developing good lifelong eating habits and overcoming eating problems.

Since obesity beginning in childhood may last into adult life, childhood obesity should be prevented. Children with handicapped conditions, such as cerebral palsy, cleft palate and diabetes, often have special feeding problems with which nutritionists can help.

Additional research has linked inborn metabolic errors with mental retardation. Phenylketonuria (PKU) is the best known example. Through tests made by State Board of Health laboratories during the first weeks of life, infants may be found with excessive

Teenagers and Foods

Teenagers are the most poorly nourished group among the population. This is partly because of increased nutritional requirements during their growing period and partly because of poor food choices. Teenagers are so concerned about appearance, weight gain, skin condition and social status that they are susceptible to dietary fads and food binges. The food choices of teenage girls are especially critical because of their preparation for motherhood. The nutritional status of a girl long before pregnancy can influence her future pregnancies and the success of their outcome. This is true today for an increasing number of girls are becoming mothers before they have achieved their own adult growth.

amounts of phenylalanine, an essential component of protein, in their blood. Diets prescribed by physicians can control this chemical and prevent serious mental retardation. Nutritionists and public health nurses spend considerable time teaching families to handle these complicated diets.

As children grow, their needs for body building nutrients increase. Nutritionists work with school health programs, with county public health nurses visiting schools and with teachers and school food service personnel to help children understand what foods they should be eating and why.

Dental caries, particularly common among children, are related to many aspects of diet, and nutritionists work with dentists and

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Public health nutritionists frequently work with nutrition specialists in other state agencies, such as the State Department of Education and the State Department of Agriculture, in stimulating youth groups to be interested in their own nutritional needs and problems. A Youth Nutrition Conference is an example of this type of cooperation.

Nutritionists guide food service personnel to plan menus for children in Head Start programs, day care centers and residential and group care facilities which are often on a limited food budget.

For the Chronically Ill and Aged

Florida, with its favorable climate, appeals to many older people as a place to retire. Health workers are concerned about the nutritional needs of these retired persons. Aging, in general, does not change a person's nutritional needs except to decrease energy needs because of the slowing down of bodily processes and the lessening of physical activity. However, the nutritionist or public health nurse may need to stress nutrition to older persons to maintain interest in eating, to stimulate a lagging appetite and to provide guidance in budgeting a limited retirement income. Without the responsibility of cooking for a family, older persons often lack imagination and incentive to cook nutritious meals for just one or two.

Chronic illnesses may require the patient's physician to make complicated diet changes. For example, for diabetics he may prescribe a diet in terms of number of calories and amounts of carbohydrates, protein and fat. To carry out this diet, most patients must be taught food values and use of food exchange lists to maintain a diet which will have variety and yet maintain a constant level of caloric value.

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- counsel individuals with diabetes in diabetic clinics, general medical clinics or when referred by private physicians;



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For the Chronically Ill and Aged

Florida, with its favorable climate, appeals to many older people as a place to retire. Health workers are concerned about the nutritional needs of these retired persons. Aging, in general, does not change a person's nutritional needs except to decrease energy needs because of the slowing down of bodily processes and the lessening of physical activity. However, the nutritionist or public health nurse may need to stress nutrition to older persons to maintain interest in eating, to stimulate a lagging appetite and to provide guidance in budgeting a limited retirement income. Without the responsibility of cooking for a family, older persons often lack imagination and incentive to cook nutritious meals for just one or two.

Chronic illnesses may require the patient's physician to make complicated diet changes. For example, for diabetics he may prescribe a diet in terms of number of calories and amounts of carbohydrates, protein and fat. To carry out this diet, most patients must be taught food values and use of food exchange lists to maintain a diet which will have variety and yet maintain a constant level of caloric value.

Nutritionists

- counsel individuals with diabetes in diabetic clinics, general medical clinics or when referred by private physicians;

- with the aid of public health nurses, conduct classes of persons with diabetes;
- provide dietary information to public health nurses who instruct diabetic patients in their homes; and
- speak at meetings of lay diabetes associations.

Nutritionists assist patients with heart condition who may require a diet controlled in fat, restricted in sodium, or designed for weight reduction. There are many other chronic conditions for which physicians prescribe diet therapy such as liver or gallbladder disorders, digestive problems, weight control and endocrine disturbances. Nutritionists counsel these patients directly or provide guidance in conferences with public health nurses on needs of individual patients or in-service programs on therapeutic dietetics.

Medicare and home health services have focused attention on nutrition for the chronically ill and aging. Nutritionists train home health aides in nutrition and food management and they serve as consultants to these aides as they undertake responsibility for serving foods to patients.

Two institutional nutrition consultants provide leadership to State Board of Health nutritionists who assist small hospitals and nursing homes with planning nutritionally adequate meals, providing therapeutic diets as ordered by physicians, and training staffs in proper methods of food handling and preparation.

Hospitals and extended care facilities must employ a qualified dietitian, at least on a part-time or consultant basis, to be certified for Medicare. With the majority of small hospitals and nursing homes in Florida not now employing a full-time dietitian, nutritionists are recruiting dietitians who can give part-time service to institutions, and providing them with refresher courses, consultation and educational material.

Nutritional Services for Low Income Groups

Because limited financial resources make purchasing food, adequate housing and adequate health care more difficult, a major portion of public health programs are directed to people with low incomes. Many of these people are further handicapped by little



... and teach a class for home health aides at a Visiting Nurse Association headquarters.

education. Guidance is given by nutritionists in planning meals around less expensive but nutritious foods, improving buying practices and preparing foods.

In 25 Florida counties, surplus commodity foods available through the State Department of Public Welfare, are distributed to eligible families. Nutritionists work with extension home economists and interested health workers to assist families in using these foods in meals. Demonstrations and "tasting parties" at the distribution centers or clinics have been conducted in several counties.

Migrant workers receive the attention of a nutritionist who is assigned to the migrant health project. The nutritional needs of these workers are complicated by make-shift homes, poor cooking facilities, erratic incomes, irregular working hours and limited

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The Nutritionists and You

Many Floridians may never meet a nutrition consultant. Perhaps their children may hear a nutritionist speak to a school group or see her visit a classroom. Some Florida residents may hear a nutritionist speak at a community meeting or read an article she has prepared for their local newspaper.

Healthy Floridians may never need the services of a nutritionist. If they eat adequate amounts of the four groups, as recommended in the section on "The Foods to Eat," they will have a nutritious

Films and Pamphlets

A few of the motion pictures on nutrition available from the Audio-Visual Library, Florida State Board of Health, P. O. Box 210, Jacksonville, Florida 32201, are listed below:

The Best Way to Eat — the importance of nutrition based on scientific knowledge.

Food the Color of Life — general information on nutrition.

Four Food Groups — the preparation of a balanced diet from the four food groups.

Human Body: Nutrition and Metabolism — the relation between nutrition and metabolism and their bearing upon the caloric intake of the body.

Nutrition Sense and Nonsense — information on food quackery.

More than Food — nutrition in nursing homes.

Some of the pamphlets also available from the Division of Health Education, Florida State Board of Health, at the above address are:

What Everyone Should Know About Obesity

The Healthy Way to Weigh Less

Eat and Enjoy It

Food Your Children Need



The institutional nutrition consultant observes the routine in a nursing home kitchen (above) and then discusses the preparation of the meals with the staff so that patients may receive more nutritious diets.



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Staff members of the State Board of Health and the Pinellas County Health Department participate in a Teen Quackery Jamboree which is sponsored annually by the Pinellas County Nutrition Committee. Skits, such as "Quack Pots," are included in the program.

FLORIDA HEALTH NOTES



Sanitarian, Public Health Nurse and Clerk

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PROFILES

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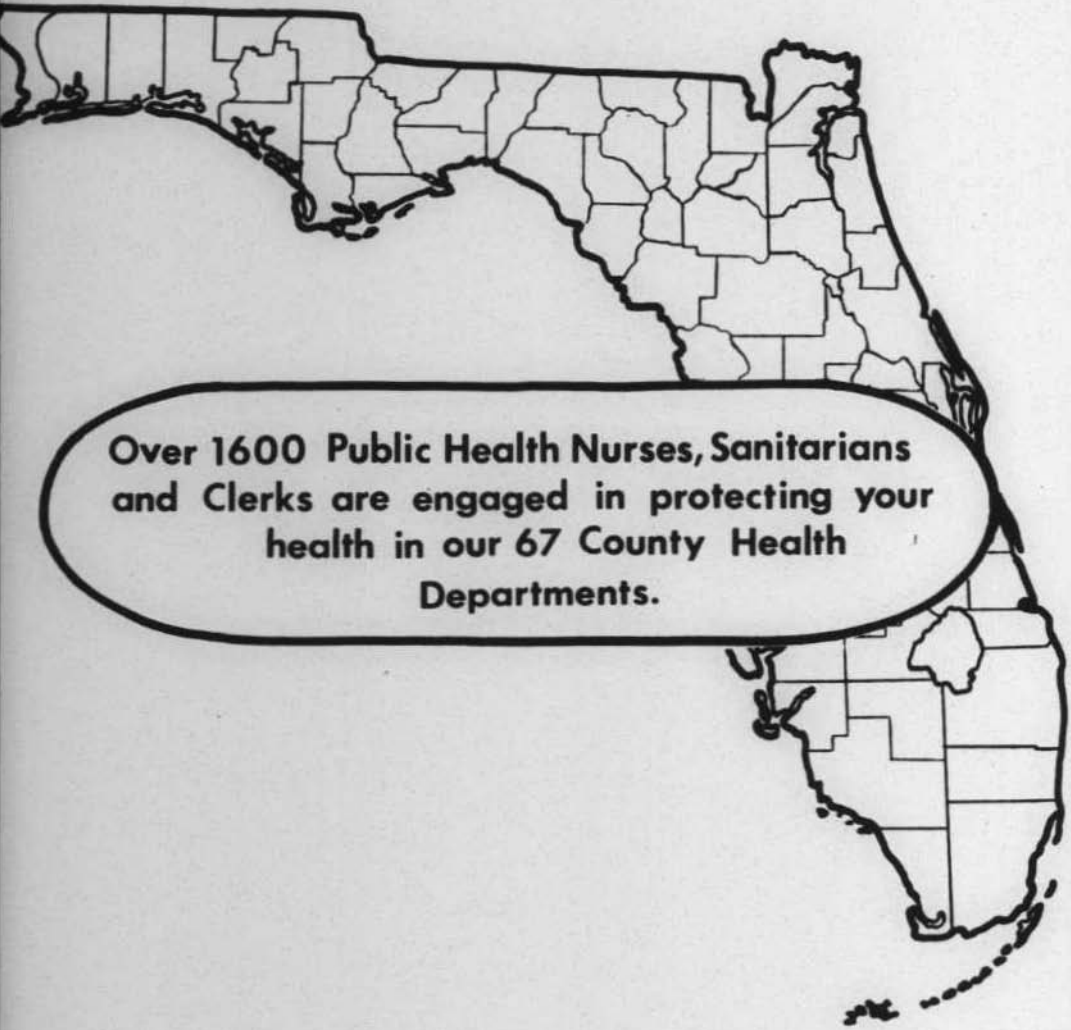
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PROFILES

(Cover photo) The coordinated team of every County Health Department includes the sanitarian, public health nurse and clerk.



Over 1600 Public Health Nurses, Sanitarians and Clerks are engaged in protecting your health in our 67 County Health Departments.

PROFILES

Clerk
Public Health
Nurse
Sanitarian

"My baby needs shots. Where can we get them? We can't afford a doctor."

"What can I do about our neighbor's garbage?"

"Where do I get a health card?"

"What can I do? I've been bitten by a dog."

"What immunizations do I need to go abroad?"

"I have a child in my class who needs medical attention. When can you see him?"

"I'm going to have a baby. What do I do."

"Where can I find out everything about health?"

Questions similar to these are asked all the time in Florida. There are people in every County Health Department who know most of the answers. They are the ones who carry on public health

programs at the local level. They are the clerk, public health nurse and sanitarian.

The clerk is the public health worker most of the public meets first—either by telephone or in the office. She does mountains of paper work to keep the County Health Department operating smoothly and satisfactorily; she makes out reports, does the filing and orders supplies.

The public health nurse is a professional who, among other duties, provides nursing service to the community, operates the clinics and acts as liaison between schools, homes and the community.

The sanitarian is the member of the staff who is responsible for carrying out health rules and regulations, for promoting a healthy environment, for conducting investigations and surveys, and for supervising sanitary practices relating to many conditions, places and establishments.

Each of these persons is an important member of the County Health Department team. The team also includes the county health director whose duties were discussed in the May 1966 issue of **Florida Health Notes**. This issue will tell you a little about the work of some of the other members of the County Health Department staff and how they carry out their responsibilities.

We cannot possibly include every detail of the work of the clerk, public health nurse and sanitarian because the work is carried out a little differently in every county—according to the needs of the county as the health director and his staff see them, the “person-

FLORIDA HEALTH NOTES

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ality" of each county, the policies and procedures of each County Health Department, and the attributes of each individual on the staff.

We cannot say one public health worker is more important than the others; so we are discussing them in alphabetical order—clerk, public health nurse and sanitarian. These people, while discussed separately, do not work separately but as a coordinated health team.

The County Health Department

Chapter 154 of the Florida Statutes notes that full-time health units shall have a director, public health nurse, sanitary officer and a clerk, who are especially trained in public health administration and practices as related to the duties of their position. These people are to be employed by the Board of County Commissioners, approved by the State Board of Health and certified by the Florida Merit System.

There are 42 county health units in Florida's 67 counties. Twenty-five of these are single county units. Some of the counties are so small that they have only a clerk and a public health nurse but share their sanitarian and county health director with one or two other counties. Thus, there are nine bi-county units and eight tri-county units.

Some of the larger County Health Departments may have as many as 450 employees, including such professional people as physicians, dentists, health educators, administrators, nutritionists, sanitary engineers and laboratory technicians. We know these people are also important to the functions of the County Health Department but we will not be discussing their work in this issue of **Florida Health Notes**.

Since many of the County Health Departments have moved from the basement of the county court house or the second floor of an annex, their images have improved in the minds of many county residents. Some people wouldn't go to the County Health Department because of such things as poor facilities in dark recesses of a business building or the lack of parking space. But new buildings have created new interests in public health and more people are

finding their way to the doors of the County Health Department. Not all departments have moved for some have had good quarters for a number of years while others are still waiting for new and better facilities.

Because public health workers know the people of their communities as well as anyone else, they are often called upon to serve on health or nursing councils. They are frequently leaders in their community, especially in the smaller counties, and active members of lodges, civic groups and churches. Sanitarians often are sought out for advice by other community groups. Public health nurses are usually active in local nursing associations and serve on health and welfare committees of civic and voluntary health organizations.



The clerk, who may also serve as receptionist, is frequently the first member of the health team the public meets.

THE CLERK

Whether she is a receptionist or a clerk in a large County Health Department or the only clerical person in a small County Health Department, the clerk is frequently the first person the public meets. She is the "information bureau" for the county. People come to her for information about health, Social Security, Medicare, welfare and other state agencies.

In the small county she needs to know where "Grandma Blake" lives, who occupies the blue house in the next block and how to give directions. This may not necessarily be true in the larger county, but she needs to be able to give directions to the welfare or some other governmental office or to any of the voluntary health agencies.

She may have a high school, a business college or a college education, but she is important because she has to know all about the nursing and sanitation programs of the County Health Department and explain their functions to the public. The clerk has to know how to handle various types of people:

an angry mother who wants her son immunized "right now";

a little old lady who comes in on a wrong clinic day; or

the big, burly man who doesn't read the sign, FAMILY PLANNING CLINIC, picks up a number and waits his turn—not understanding that he is in line for the wrong clinic.

The clerk has to understand people with limited educations who really don't know what they need and others who communicate poorly.

Forty of the 67 County Health Departments have only one or two clerks while 14 counties have more than 10. In many of the smaller counties much of the administrative work is up to the clerks, because the county health director is shared by other County Health Departments and he is in the office only one or two days a week. These are usually clinic days and there is much for the director to do.

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A Myriad of Duties

Mrs. L is the only full-time clerk in a small County Health Department. She has to work closely with the rest of the public health team in her county. She answers the telephone, takes messages for the staff, and because she must make appointments for the county health director, public health nurse and sanitarian, she needs to know where they are most of the time and when they will be back to the office.

She types letters, reports and payrolls; keeps the sick and annual leave records and personnel files of all employees up to date. She sets up patient records for clinics. One of her most important duties is to keep records of the County Health Department confidential. Without the proper keeping and filing of records, the operation of the department would be disrupted.

When the county health director is in the office only one or two days of the week, Mrs. L must of necessity handle much of the correspondence, travel reports and inquiries which cannot be routed to the sanitarian or public health nurse. During those days when the county health director is holding clinics, Mrs. L must have the

New business machines, such as photocopiers, have made the work of the clerk much easier.



files on each patient ready for the time when he will see the physician; she codes the visit and files the folder in its proper place.

As in many County Health Departments, Mrs. L is responsible for more than just the managing of the office. Frequently her advice is sought by the county health director on many different subjects. She keeps the financial records and helps make up the annual budget and financial reports which go to the State Board of Health and the Board of County Commissioners.

Because she is the only clerk in the County Health Department, Mrs. L has to do all the work that is handled by clerical specialists in larger counties. She is the Deputy Registrar of Vital Statistics and checks birth and death certificates. Many times she is called during the night to issue a burial-removal permit so a funeral director can take a body from a hospital.

Mrs. L has to have all of the information for international travel at her fingertips; she alphabetizes and files laboratory reports, types the orders for drugs and supplies and refers inquiries from the local press to proper sources when her county health director is not at the office. Mrs. L has to supervise the custodian and sometimes sees to the upkeep of the County Health Department grounds and buildings.

Keeping the records and files of the various hospitalization and indigent programs in order is an important part of Mrs. L's work. She makes out applications to send cancer patients to the hospital, calls the hospital for an appointment and sees that the necessary follow-up paperwork is handled properly. Such programs as Hospital Services for the Indigent, Medicare and Maternal and Infant Care require mountains of paperwork and correspondence.

Because of the intricacies of her duties, Mrs. L must know something about organizational setup and policies of the State Board of Health and be familiar with the various health laws passed by the State Legislature.

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In one large County Health Department, new clerks are given a two-week orientation prior to starting their work. They spend a day in each of the various departments and one of the health centers. They are informed about the major rules and duties of the County Health Department, general information, including conduct and dress, and such fringe benefits as vacation, hospitalization, insurance and retirement. Following a successful six-month probation period, they are given permanent status.

In the larger departments, clerical staff meetings may be held once a month. These are combination meetings which feature a business and an educational period to work out problems concerning the staff and an educational period where the clerks learn about good telephone manners, proper dress for the office and new health programs.

The Clerks' Manual

The procedure for much of the clerks' work is often set down in a clerical handbook which tells the proper way to type letters and memoranda and fill out various types of activity reports. Much of this information is important to the clerks who process 500 or more health cards a week or to the clerk who is substituting in a tumor clinic for a fellow employee. The book tells who should receive birth and death certificates, the procedure in handling venereal disease patients and the names of important people in the County Health Department, local government and community. New business machines have made the work of the clerks easier and added to the efficiency of the County Health Department.

A good clerk screens the miscellaneous information seekers from the members of the staff; knows where the resources of the community are located; takes care of a multitude of minor details of the County Health Department work; and relieves the director and staff of the problem of answering unnecessary questions from the public.

The clerk is also the important member of the team who keeps communication channels open between the people of the community



Keeping records and bookkeeping are important parts of the clerk's duties.

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THE PUBLIC HEALTH NURSE

The aim of public health nursing in Florida is to give quality nursing service to the entire community. When the public health nurse sees a new mother and her baby in their home, inspects a preschool child who may have health problems, talks to an expectant mother who needs health information, interviews an adult who has contracted venereal disease, or visits an elderly person who has diabetes, she wishes to render the best service to all of these people.

The public health nurse is a registered professional nurse, a graduate of a three-year diploma school or a degree graduate of a college or university. If she has had no public health education or experience, the nurse receives a planned orientation. In larger counties the orientation is given by the County Health Department.

Field training centers, to orient nurses from smaller counties to public health nursing, have been established in Clay, Orange, Palm Beach and Polk County Health Departments. This intensive program lasts for eight weeks. Regardless of the size of the county, all orientees receive an orientation which follows the guide developed by the Continuing Education Committee of the State Board

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Home nursing service is an important part of the public health nurse's work.

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In the Small Counties

While 14 of the County Health Departments have more than 10 nurses (one has 160), 44 of the 67 counties have five or less public health nurses.

Mrs. G, one of two public health nurses in a small county, has in her caseload a hundred or more families whom she visits in the home. She also provides nursing service to schools, gives nursing service in clinics and to persons who come into the Health Department.

The families may have from one to nine individuals to whom she gives services:

the pregnant woman,

the newborn baby and his mother,

the children of all ages with their myriad of problems, such as a congenital defect, hearing, weight or emotional problems,

the father with a heart defect, and

the diabetic grandparent who needs home health services.

When Mrs. G plans her visits for the day she uses her professional knowledge and sets priorities for the visits. She uses safe nursing techniques which prevent her transmitting infection from one family to another.

- She visits a mother and her newborn first thing in the morning. She undresses and inspects the baby for malformations or other conditions. At the same time, Mrs. G talks to the mother about her feelings toward the baby and instructs her in the baby's care and what to expect in the growth and development of the infant. Also, she will evaluate the mother's physical and emotional status.

- From this visit, Mrs. G goes to the home of a schoolchild to discuss with the parents the necessity for completing immunizations or to refer the child for dental or medical care. About 60 per cent of Florida's schoolchildren need dental care while 20 per cent need hearing or vision correction. The nurse is often able to help the family plan to meet the needs or to find necessary assistance.

- Mrs. G then goes to one of the schools in her county. On this visit she will contact the school health coordinator or principal to learn if there are any special problems. The visit may be for one or many reasons, some of which are: to help with physical examinations given by a physician; to test the vision or hearing of children in a selected grade; to teach infant care to a home economics or first aid class; or to discuss with a classroom teacher the health, physical and mental status of each student in the room.



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In the Small Counties

While 14 of the County Health Departments have more than 10 nurses (one has 160), 44 of the 67 counties have five or less public health nurses.

Mrs. G, one of two public health nurses in a small county, has in her caseload a hundred or more families whom she visits in the home. She also provides nursing service to schools, gives nursing service in clinics and to persons who come into the Health Department.

The families may have from one to nine individuals to whom she gives services:

the pregnant woman,

the newborn baby and his mother,

the children of all ages with their myriad of problems, such as a congenital defect, hearing, weight or emotional problems,

the father with a heart defect, and

the diabetic grandparent who needs home health services.

When Mrs. G plans her visits for the day she uses her professional knowledge and sets priorities for the visits. She uses safe nursing techniques which prevent her transmitting infection from one family to another.

- She visits a mother and her newborn first thing in the morning. She undresses and inspects the baby for malformations or other conditions. At the same time, Mrs. G talks to the mother about her feelings toward the baby and instructs her in the baby's care and what to expect in the growth and development of the infant. Also, she will evaluate the mother's physical and emotional status.

- From this visit, Mrs. G goes to the home of a schoolchild to discuss with the parents the necessity for completing immunizations or to refer the child for dental or medical care. About 60 per cent of Florida's schoolchildren need dental care while 20 per cent need hearing or vision correction. The nurse is often able to help the family plan to meet the needs or to find necessary assistance.

- Mrs. G then goes to one of the schools in her county. On this visit she will contact the school health coordinator or principal to learn if there are any special problems. The visit may be for one or many reasons, some of which are: to help with physical examinations given by a physician; to test the vision or hearing of children in a selected grade; to teach infant care to a home economics or first aid class; or to discuss with a classroom teacher the health, physical and mental status of each student in the room.



The public health nurse gives a talk on health during a visit to a school.

The nurse serves as liaison between the teacher and the child's parents where health problems are slowing the child's progress.

Mrs. G's visits for the day may include an elderly diabetic woman with an infected foot, who is receiving service under Medicare. She will change the dressing while determining if the patient's food habits should be altered, and/or discuss with the patient other health problems.

- She also visits a 40-year-old father who has had a heart attack. Following the physician's plan of treatment, Mrs. G may bathe the patient, give an injection, and discuss with the wife a low sodium diet.

When performing any of the above nursing services, Mrs. G is using her professional knowledge and drawing on the information

she receives from conferences, inservice education, seminars and other educational activities.

Clinical Services

As one of the two nurses in the county, Mrs. G works with the county health director in the clinics. On the first and third Thursday of the month, there are prenatal clinics. In some counties there are maternal and infant care high-risk clinics where women who may have complications during pregnancy and delivery of their babies are given special attention.

On the second and fourth Thursday of the month, there are well-baby clinics where infants are examined for growth and development, weighed and given immunizations. In the postpartum period, mothers are examined, their blood pressures and temperatures are taken, and any problems they may have with the infants are discussed with the county health director and the public health nurse. Family planning may also be discussed.

General clinics are held once a week and Mrs. G and the director see all types of health problems. To many patients, the clinics are not only a place to receive medical care but also are a time to have a social visit with friends.

Clinics are held on different days in the County Health Departments. In some of the smaller counties, they may be held only once a month. In the larger counties they may be held more than once a week. If you wish to visit a clinic and you do not know when it is held, contact your County Health Department and the staff members can tell you.

Nursing in the Larger Counties

Where Mrs. G may cover nearly all of her county, Miss B, who is a public health nurse in a large county, is assigned a district where she is responsible for the same nursing service as Mrs. G—clinics, schools and home visits.



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In some larger counties there is a wide variety of specialization with one nurse in charge of all tuberculosis patients, another in charge of clinics, a third acting as supervisor of home health aides, and a fourth as coordinator at the hospital who arranges nursing care for patients after they leave the hospital.

Few County Health Departments have nurses doing specialized duty; most of the 900 public health nurses in Florida do generalized public health nursing as does Mrs. G.

Once Mrs. G and Miss B saw only those families who had a health problem; today they render service to nearly everyone in the community. Not only do they see the child whose family could not afford private medical care, but now they test and refer schoolchildren of the middle and upper income brackets, some of whom may need dental care or eye care because their parents are not aware of it.

For example, Miss B was asked to visit the home of a teenager who was having crying spells in school. This student came from a well-to-do family, which was giving the girl many so-called opportunities—music and drawing lessons, assisting her mother with social functions—and yet expecting her to excel in her school work. Miss B was able to help the parents see the need to limit these activities for the emotional and physical stability of their child.

Continuing Education

The Division of Public Health Nursing has always encouraged nurses to improve themselves through graduate programs and inservice education programs which are provided throughout the state. Countywide inservice programs are conducted in the larger counties while some of the smaller counties band together into groups of six to eight counties.

Each county or group has a chairman, vice chairman and secretary. Each group plans its program according to the needs of the nurses, such as new programs. Topics may be child growth and development, new nursing procedures or related fields. Resource

persons are available to talk to the groups on a variety of subjects, such as diabetes, tuberculosis, home health aides or safety. During these meetings the public health nurses have time for informal exchanges of ideas and plans.

A nursing consultant from the Division of Public Health Nursing is available to each County Health Department. The services of the consultant depend upon the size of the county. In the smaller counties, the public health nurse saves her questions and problems for the consultant's visit. After listening to and discussing the problems, the consultant may make home, school or nursing home visits with the nurse. She, the consultant, may be asked to explain a new program with a community group. She helps the public health nurse to sharpen her professional practice. On most visits the public health nurse and the consultant confer with the county health director to discuss the suggestions the consultant has given as well as to plan expanded and/or improved nursing services.

Nurse in Different Roles

A public health nurse is typically a warm individual with empathy and sympathy. She is a person ready to help patients and their families with health needs, enabling them to grow to their maxi-

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The public health nurse is a coordinator of many things—home, hospital, nursing care, home-school relations, community and health needs, etc. Since she is in direct contact with the people of the community, she is looked upon by official and voluntary health agencies as the person who can help carry out their programs. The county health director, social worker, mental health worker, psychologist, physician, dentist, nutritionist, and sometimes the sanitarian, depend upon her, but she is nevertheless a member of the County Health Department team.

We have covered only a part of the work of the public health nurse. If you wish more information, write the Division of Public Health Nursing, Florida State Board of Health, P. O. Box 210, Jacksonville, Florida 32201.

THE SANITARIAN

The 340 sanitarians in Florida are charged with the administration of the health rules and regulations known as the Sanitary Code of Florida. Only nine of the 67 counties have 10 or more sanitarians while 46 County Health Departments have fewer than five to check out nuisance and dog bite complaints, see that local restaurants are clean places to eat, make sure that schools are safe places for children, and see that home and commercial establishments have proper water supplies and satisfactory systems for disposal of liquid and solid wastes. Nuisance complaints indicate what the general public feels are major health problems.

Clinical work is a part of the public health nurse's work in small and large counties, although some counties have specialists in this field.



Because of operational policies in the different counties, there are all shades of generalization and specialization in the sanitarians' work. In a few of the larger counties there is a high degree of specialization with each man responsible for a particular phase of the work, such as trailer parks, food establishments or nursing homes. In several counties, sanitarians are increasing their offerings of training courses to food service personnel.

In one county there is partial specialization with the county divided into districts and each man responsible for all environmental health work, except for swimming pools, air pollution, migrant labor and food processing plants which are handled by specialists.

The majority of sanitarians, however, work on a generalized basis within a specific district of the county. The environmental health

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work setup depends greatly on the geographic make-up of the county and the distribution of the population.

The Small County

Tom M, who is the only sanitarian in his county, carries on an independent program under the direction of his county health director. He is responsible for setting up programs for environmental health; he conducts field investigations and surveys and sees that sanitary practices are carried out in his county. Frequently he is called upon by various local governmental agencies for his expert advice on sanitary programs, such as planning of subdivisions or the construction of buildings. Plans for sanitary sewers and sewage treatment plants are approved by the regional sanitary engineer, but Mr. M sees that they are built according to specifications. Like a few other sanitarians, Mr. M is also responsible for the work of the local Mosquito Control District.



A public health nurse, who specializes as a hospital coordinator in one county, discusses future home nursing care with a hospitalized patient, nurse and doctor.

Complaints take a great deal of Mr. M's time. During an average day he:

- answers a complaint about a dog bite. Sometimes he has to see that the dog is identified and the owner has the animal confined until it is found not rabid;
- checks out a complaint about an overflowing septic tank. He also obtains samples of private water supplies in the area and sends them to the State Board of Health's laboratory;
- inspects the lunchroom operation in a local school;
- drives halfway across the county to check on the installation of a septic tank;
- inspects a trailer park and restaurant while he is in the vicinity, and
- meets with a builder to discuss water and sewage requirements for a new subdivision.

The Large County

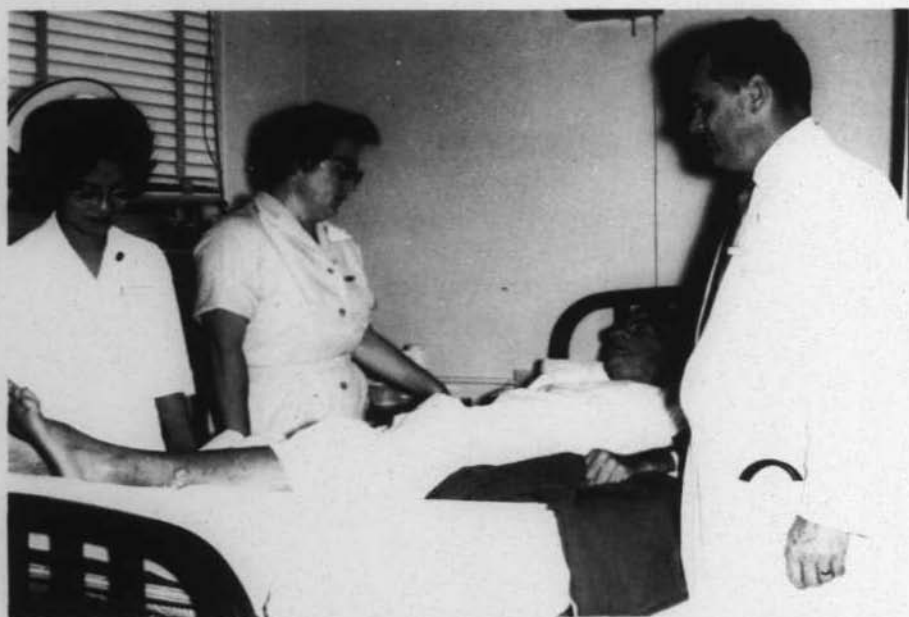
John S, who is assigned a district in a large county, is responsible for all phases of the environmental health work, except hospitals and nursing homes, swimming pools, water works, sewage treatment plants and child care centers. One county has over 200 such child care centers which are inspected and licensed under a local law. Fifteen of Florida counties have similar legislation at present.

Mr. S does have all food establishments in his district, schools, trailer parks, rabies control and the answering of complaints. He works closely with those men who are specialists and reports any violation to them or the county sanitary engineer. Sanitarians also consult with governmental agencies, such as county planning de-

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partments and city public works departments, regarding local environmental health problems and needs.

Planning is necessary to carry out an effective program. The director of environmental health has an overall picture of the program and tries to direct and coordinate the efforts of his staff. Mr. S knows he has a set number of establishments to inspect—restaurants, schools and trailer parks. These he can plan to cover within a specified time. What he cannot plan is the number of complaints and dog bites that must be investigated. Reports must be made and filed.

The workload of the sanitarian is the sum total of establishments, facilities and situations for which he is responsible, plus sampling, testing, conferences, training and record keeping. In one county survey, sanitarians were found to spend an average of



The sanitarian needs to check plans for such projects as sewerage systems to make sure they are built to specifications.

22.2 per cent of their time in traveling from the office to work in the field or from one place to another. An additional 16 per cent of their time was spent in the office doing necessary paper work and answering telephone calls and meeting with people.

Problems for the Sanitarian

The expanding population has increased the workload of Tom M and John S. They face many special problems which are complicated by the lack of money or adequate local zoning ordinances. Some of these problems are:

- garbage and trash disposal. Many unincorporated areas have poor or no garbage disposal plan or no laws to require householders to utilize available private collection service;

- exotic solid wastes. Automobile bodies, wornout home appliances, bed springs and mattresses and lawn debris always present a special problem in mosquito and rodent control;

- food service. Sometimes inspection of eating establishments at peak hours is important to check on work habits, food storage and potential food hazards which do not show up at other times. Sanitarians are also responsible for the sanitary conditions and safety of foods in food outlets (grocery and meat stores). They also investigate food poisoning outbreaks, obtain food samples, interpret laboratory results, and advise on the application of the findings toward the elimination of future food-borne outbreaks;

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• dog bites. Finding the offending dog and instructing its owner to have the animal confined are frequent problems. Sometimes police and sheriff's deputies assist by answering dog bite calls when the County Health Department is not open. If the dog has had rabies vaccine within the previous 12 months, the animal may be confined at home. If not, the dog must be taken to a pound or animal hospital at the owner's expense. The sanitarian releases the dog at the end of 10 days if there is no sign of rabies.

Education, Recruiting and Training

The beginning sanitarian is required to have a Bachelor of Arts or Science degree but his education does not stop here. Besides being responsible for recruiting of sanitarians for the County Health Departments, the State Board of Health's Division of Sanitation is responsible for training programs and it encourages the sanitarians to take graduate work or correspondence courses.

The Division gives a 12-week training course twice a year for new sanitarians. This course covers the basic environmental health field. Topical courses for more advanced studies are also offered in

such subjects as program administration, swimming pools, common carriers, food hygiene, waste disposal, environmental health and sanitary practices.

A total of 150 sanitarians has taken one or more of the four correspondence courses offered by the Communicable Disease Center of the U. S. Public Health Service and coordinated by the Division of Sanitation. These courses are in basic mathematics; insect, rodent and vector control; communicable disease control; and environmental sanitation. Sixty-two sanitarians are currently enrolled in their second course.



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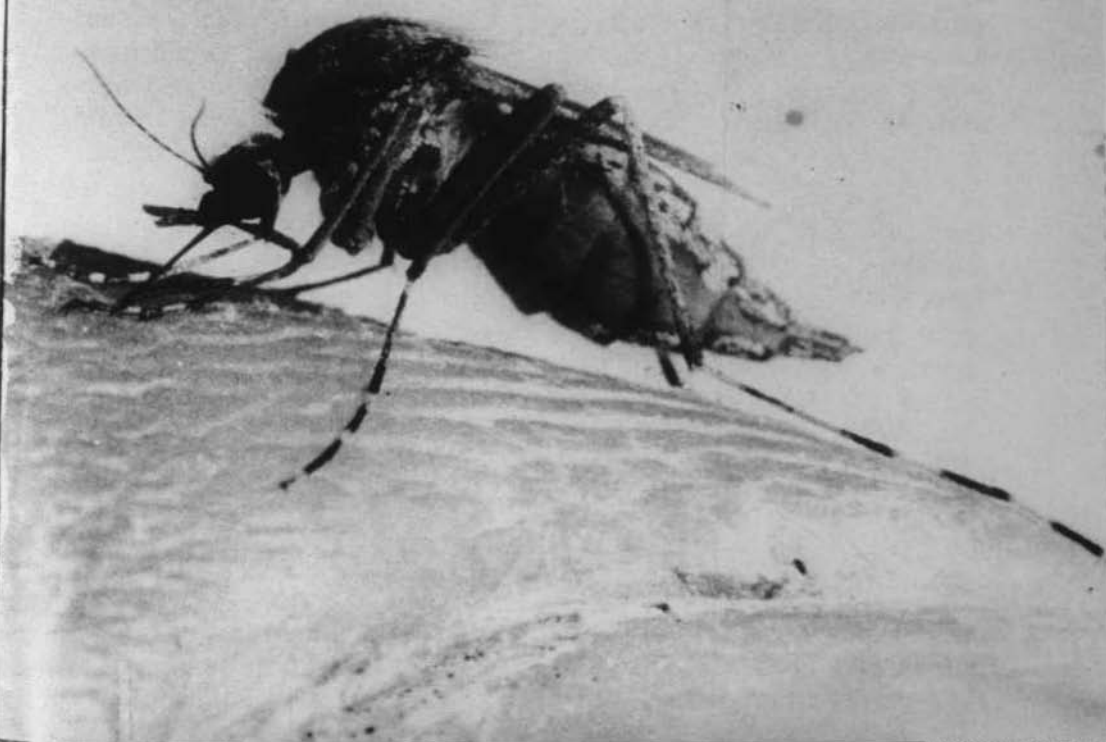
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Photograph on page 212 courtesy of *Lakeland Ledger*, Lakeland, Florida.

FLORIDA HEALTH NOTES



VOLUME 59 — NO. 5

Man, Mosquitoes and Microbes

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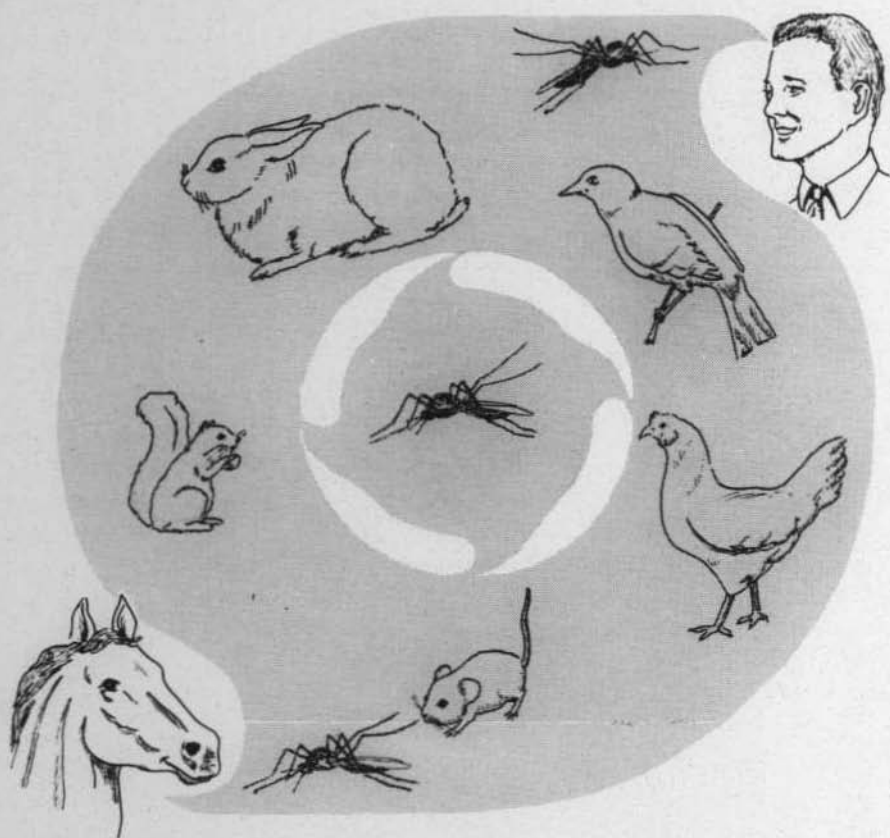
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(Cover photo) A salt marsh mosquito, *Aedes sollicitans*, takes a meal of blood from a human finger. If the mosquito has a virus, it would pass it on to the human through a salivary fluid which the mosquito injects into the human during the meal.



Arthropod-borne diseases are normally carried by mosquitoes from one bird to another or to a rodent. These serve as reservoirs for the diseases. When horses or men are bitten by a virus-carrying mosquito, they become ill and sometimes die.

Man, Mosquitoes and Microbes

It's summertime in Florida!

At one time summer meant "mosquito-time" and life was considered unbearable; pestilences raged; a member of Congress said that the state could never be developed, was not a fit place to live, and described it as a land of swamps, alligators, frogs and mosquitoes. Today, only a few decades later, mosquito control has made Florida a year-around tourist's paradise, a retirement place and a desirable spot for enjoyable living.

Ever since the Spaniards, and recorded history, touched these shores, man and the mosquito have been bitter enemies. This insect has been known as a biting pest for centuries, but only since the beginning of the 20th Century has man known that yellow fever, malaria, dengue fever and some viral encephalitides were arthropod-borne diseases.

Mosquitoes have always been considered one of the unpleasant things in life. The knowledge of how to eradicate these pests and the diseases they carry is being acquired through research carried on by the State Board of Health, the U. S. Public Health Service, the U. S. Department of Agriculture, mosquito control districts, private philanthropic foundations and other governmental agencies.

This issue of **Florida Health Notes** will tell you about

- the dangers engendered by the mosquito;
- the fight to make the state pleasantly livable for you, for the six million other residents of the state and for 17 million annual visitors; and
- the research being conducted to find the intimate secrets of a mosquito's life and to control arthropod-borne diseases.

Man - The Victim

From the earliest days mosquitoes have been a nuisance in Florida. They have played a prominent part in the slow development of this subtropical gem called Florida, even though the state otherwise had much to offer its residents and visitors. The beauty of the Sunshine State has been marred by 67 species of mosquitoes, several of them carrying disease and/or otherwise making life intolerable.

The mosquito was such a plague when the Spaniards arrived that they named what today is Ponce de Leon Inlet, or Mosquito Inlet, "Barro de Mosquitos." Since the time of the earliest maps, one of which dates from 1615, some of Florida's inlets, lagoons and sections have borne the name Mosquito. In the 18th Century, the part of Florida lying between the St. Johns River and the coastal lagoons north of Cape Canaveral was called "The Mosquito Country," or "The Mosquitoes."

Two lagoons in the area were named North and South Mosquito Lagoons. When the British owned Florida, they tried to improve the nomenclature by naming the north lagoon after the Earl of Halifax and the south lagoon after the Earl of Hillsboro. Later in the 19th Century, these names became official but the Hillsboro River was changed about 40 years ago to North Indian Lagoon to avoid confusion with a stream near Tampa.

FLORIDA HEALTH NOTES

Published monthly by the Florida State Board of Health, Wilson T. Sowder, M.D., M.P.H., State Health Officer, Publication office, Box 210, Jacksonville, Florida 32201. Second class postage paid at Jacksonville, Florida. This publication is for individuals and institutions with an interest in the state's health programs. Permission is given to quote any story providing credit is given to the Florida State Board of Health. Editor: Robert A. Schoonover, M.A., Division of Health Education.

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The insect was feared by armies that fought across Florida. Soldiers were so beset by mosquitoes during skirmishes that the men were unable to fight.

For many years settlements were restricted to the northern section of the state. The southern portion was a series of swamps, lakes, rivers and hammocks populated mostly by hordes of mosquitoes and other biting insects. Even though northern Florida was settled, it suffered from disease, hardship and poverty. With the exception of Key West, the major cities—Tallahassee, Jacksonville,

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St. Augustine and Pensacola—were in this area, which was known as the “malaria belt.”

Every year deadly fevers spread consternation throughout the region. Shops were closed; fear of the epidemic and the stifling heat caused those who could afford the expense to migrate North to more healthful climates for the months of August, September, October and November. Those who were forced to stay behind suffered through the pestilent seasons or were buried in the large cemeteries which marred the beauty of the region.

When the statehood of Florida was being debated in Congress, John Randolph of Virginia stated that Florida could never be developed, nor would it ever be a fit place to live. He described the region as “a land of swamps, of quagmires, of frogs and alligators and mosquitoes.”

The Story of Yellow Fever

For years yellow fever brought fear and panic to many Florida cities which were visited by ships from the Caribbean and Central and South America. Commerce and passengers arriving in Florida ports seemed to be accompanied by wave after wave of yellow fever. Many strange remedies were recommended. Mail and cargo were

An air plant, or bromeliad, is the breeding place of several species of mosquitoes, including *Aedes Aegypti*, the yellow fever carrying mosquito.



fumigated; cannons were fired; lime was spread in the streets, houses and shops; bonfires were lit at night.

The 1877 yellow fever epidemic in Fernandina and Jacksonville was described by historians as the state's greatest holocaust. Fernandina, with a population of 1632, had 1146 persons ill with the fever. Twenty-four died. In 1887, yellow fever epidemics raged in Key West, Tampa, Plant City and Manatee. The panic was so widespread in Tampa that lighted lamps were left and stoves were still burning when people fled the city in haste. The 1888 epidemic in Jacksonville saw some 10,000 persons (out of a population of 26,800 in Duval County) flee the city in carriages, drays, wagons, trains and ships laden to capacity.

The yellow fever epidemics brought about the creation of the State Board of Health. Although nobody knew it at the time, the public health programs of Florida had their beginning in the mosquito. By 1901 this insect was discovered to be the transmitter of yellow fever. Following an epidemic in Pensacola in 1905, the quarantining of ships which were thought to be bringing the vector from foreign ports, the screening and spraying of homes, the destruction of adult mosquitoes and the prevention of mosquito breeding brought about an end to the fearsome epidemics.

The mosquito was also incriminated in the transmission of dengue fever and malaria. Although observations were made by the first State Health Officer, Dr. Joseph Y. Porter, that attacks of malaria were more deadly along the river bottoms, marshlands and in the flatwoods, no concerted efforts were made to control malaria until World War I when drainage and larviciding were carried out at Camp Johnson by the joint efforts of the U. S. Army, the U. S. Public Health Service and the State Board of Health.

Mosquito Control's Beginning

The first malaria control program was undertaken by the State Board of Health in Perry in 1920. At the time it was the largest project of its kind in the country. A total of \$28,000 was spent and 47,000 cubic yards of dirt moved to make drainage ditches and canals. The cost of the project was borne by the City of Perry,

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Taylor County and the Burton Swartz Cypress Company with the State Board of Health supplying technical supervision. The resulting better health of the people of the area proved the benefits of the project.

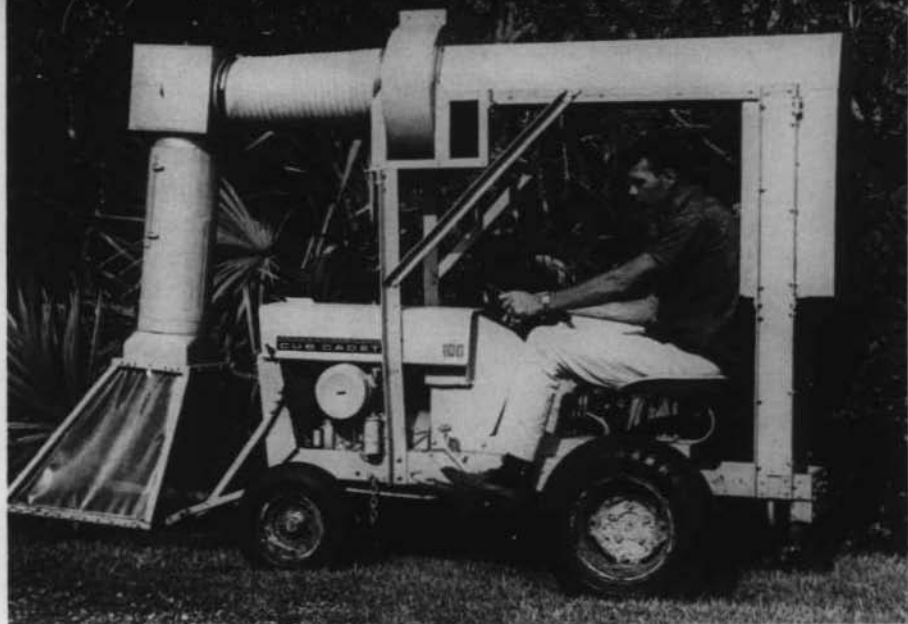
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The State Board of Health created the Bureau of Malaria Control in 1941 to study and make recommendations for controlling malaria in the state. This became the Bureau of Entomology in 1946 and the scope of activity was made to cover all work pertaining to all arthropods transmitting human diseases or annoying man by their bites.

The State Board of Health's Entomological Research Center at Vero Beach was established in 1955 to study Florida's biting insects, particularly mosquitoes, sand flies and yellow flies. The aim was to eliminate these nuisances from the Florida scene. The Encephalitis Research Center was established at Tampa in 1962 following an epidemic of St. Louis encephalitis to investigate the viruses carried by arthropods and, if possible, bring about some kind of control. The work of these centers will be discussed later in this issue of **Health Notes**.

Mosquito - The Villain

The mosquito is a long-time, undesirable resident of Florida. Humans living in the state have been swatting mosquitoes for generations but eradication is most difficult. There are 67 species in the state and each has its own particular mating and breeding habits, living and resting areas, and its own preference for food—



This motorized vacuum machine has been developed by staff members of the State Board of Health to collect blood-engorged female mosquitoes from their resting places among woodland debris.

which may be human blood. Seven of the 67 species have been implicated in the carrying of arthropod-borne diseases which are seriously affecting humans and animals.

The Female is Deadly

As everyone knows, the female mosquito is the one that causes the problems because she is the one that bites and carries disease. The male mosquito spends his short life on the edge of breeding areas, mating with any female that comes near, sipping nectar from flowers and performing his "twilight dances."

Life for mosquitoes begins as an egg laid on water or moist soil, or inside a can, tire, air plant, tree hole or most anything that holds water. The larvae, curled up inside the eggs, hatch at once if in water or may stay that way for weeks or months until rain or tidewater covers them. The free-swimming larvae, or wigglers, grow through several changes of skin in about five to seven days and change into pupae which look like animated commas. In a couple of days, the pupa's skin splits up the back and out emerges the winged and "lance-equipped" adult mosquito.

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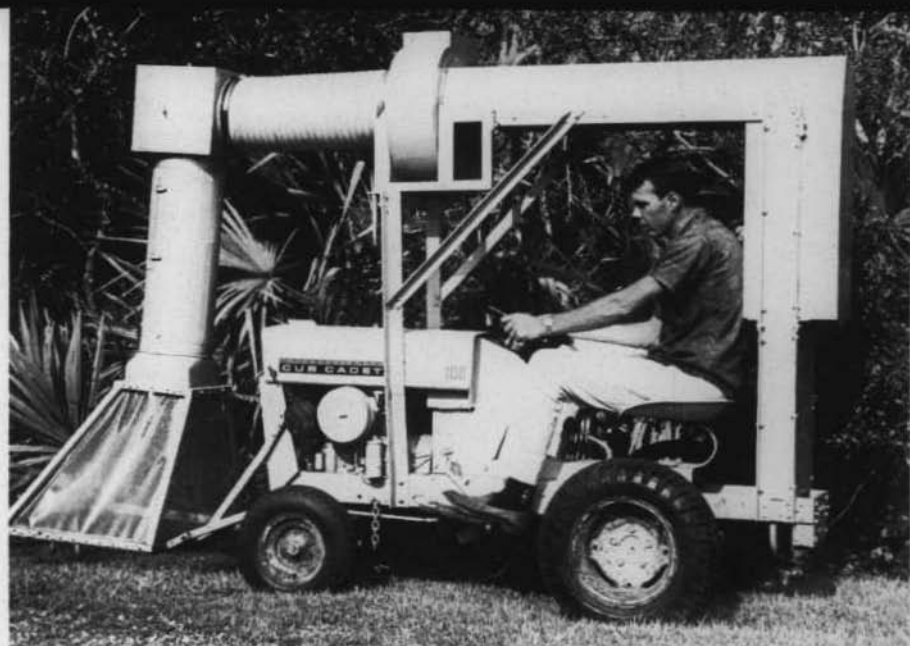
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Mosquitoes are identified and counted in several laboratories of the State Board of Health.

The newly-emerged mosquito must wait six to eight hours before it can fly away from the place of its birth. Then, if it is dark, it may migrate from two to 10 miles. Entomologists, using radioactive means of marking mosquitoes, have found some species that will migrate up to 25 miles. The migrations appear to be mechanical — an urge to go somewhere. Following the migration, the female mosquito settles down to a life of obtaining food, waiting for her eggs to mature and then laying them. She goes through several cycles of this and then expires at the ripe old age of two or three weeks. Frequently the female needs a blood meal for her eggs to mature but this is not true of all species.

The elimination of the mosquito from the Florida scene is being researched and carried out in all stages of its life — the egg, larvae, pupae and adult. The first three stages can be accomplished by natural enemies of the mosquito, such as fish, or with larvicides; removal of breeding places, such as ditching and draining of swamps; or removal of water-holding containers left by humans.

The eradication of the adult is necessary because of the biting habits of the female or because of a sudden epidemic of encephalitis that does not allow time for the reduction of mosquitoes in their breeding places. Fogging and spraying therefore become necessary.

All techniques to control mosquitoes must be safe for man and be harmless to valuable forms of life in the mosquito's environment. For example, when controlling pasture-breeding mosquitoes, other forms of wildlife must be considered at the same time that mosquito production is halted. When draining, filling or flooding marshes, other life in the swamps must be considered. While useful forms of life must be preserved, the application of insecticides, such as the spraying of homes in malaria control, may have a beneficial side effect by destroying other domestic pests — flies, roaches and ants.

Where Do Mosquitoes Breed?

As previously stated, each mosquito species prefers its own breeding place. Some are domesticated and breed in and around the dwelling places of humans or on lands converted to human use, such as pastures, groves, ditches, drains or even in polluted waters. Other mosquitoes prefer wild lands, such as swamps, ponds and woodland pools—far away from man and his habitats. Some species are not particular and will breed in both places.

The Domestic Mosquito

Aedes aegypti, the mosquito that carries yellow fever and dengue fever, is the most domesticated. It breeds around man's home in cans, old tires, bird baths, drains, vases, tree holes, air plants — anywhere water can collect. The eggs are laid on the side of the container, just above the water line. The adult seldom flies from its breeding place. At the present time there is an intensive federally-



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supported program in Florida to eradicate *A. aegypti*. This campaign is part of a nationwide program being carried out to fulfill a commitment under international treaty with South and Central American nations to eradicate the yellow fever carrying mosquito from the Americas.

Culex nigripalpus, the mosquito implicated as the carrier of St. Louis encephalitis in Florida, is a wide breeder. It likes all kinds of man-made places — agricultural fields, irrigated pastures and groves, fallow fields, grassy and drainage ditches, floating exotic plants, home premises and polluted waters.

Culex quinquefasciatus, which transmits bird malaria, fowl-pox and other diseases, breeds in temporary receptacles, drainage ditches and polluted water. It is also a carrier of St. Louis encephalitis throughout the United States, but it has not yet been incriminated in Florida.

The Salt Marsh Mosquito

Two of the greatest pest mosquitoes, *Aedes sollicitans* and *Aedes taeniorhynchus*, usually breed in areas along the coast, marshes, swales and mangrove swamps, which may be flooded by rain or high tides (not normal tides) for a week or longer. The most plentiful of any species, these two can fly up to 25 miles.

The Freshwater Swamp Mosquito

Aedes infirmatus and *Aedes atlanticus*, which are capable of carrying California encephalitis, and *Aedes vexans*, which transmits heart worms in dogs, are found in temporary freshwater pools and on river plains flooded by heavy rains. Some *Psorophora* species are also found in flooded fields, irrigated ditches and groves, and rain pools.

The malaria mosquito, *Anopheles quadrimaculatus*, is found in maple and gum swamps, freshwater marshes and ponds, lime sinks, flooded fallow fields, drainage ditches and floating exotic plants. *Anopheles crucians* is found only in cypress and maple-bay swamps, fresh marshes and ponds, grassy ditches and borrow pits.

The Tree-Hole and Air-Plant Mosquito

Where trees and air plants are found in great numbers, *Aedes triseriatus* and two *Wyemoyia* species, *mittelli* and *vanduzeei*, breed and are found in vexing abundance.

The Intimate Life of the Mosquito

The control of the mosquito can be carried out in many ways but research can tell what is the best and most economical way to do it. Improvement in mosquito control has been the direct result of research. The Entomological Research Center was set up by the State Board of Health 12 years ago to further research and control.

Much needs to be known about the insect to be controlled. Unfortunately, because of her widespread movement, only a small fraction of the female mosquito's life has been known in the past — mostly about her birth and the moment she bites you. How much knowledge of the intimate life of the mosquito — where she goes, where she feeds, mates and lays her eggs — has been acquired, but more needs to be known to bring her under man's control.

Mosquitoes are first studied in their natural habitat. These field studies bring out what needs to be clarified and verified in the laboratory. Through the raising of captive mosquito colonies, the process is refined. Problems are then brought back to the field for experiment and study in nature.

Out of this interplay between field and laboratory comes an improved understanding of the mosquito's total natural history. The mosquito is as complicated a creature as man and studies of the whole insect need the inclusion of such areas as endocrinology and metabolism before a complete understanding is reached.

This research is carried on in four sections at the famous Entomological Research Center in Vero Beach.

The Ethology Section studies the life histories and habits of the mosquito. Among the special projects undertaken is a study of salt-marsh mosquito migration. The breeding, emerging and exodus



Mosquitoes are marked prior to being released from the rearing pens of the Entomological Research Center.

of the mosquito from the marsh is well understood, but the actual migratory flight occurs only at night which makes its study difficult. The final distribution of marked salt marsh mosquitoes has been determined but the scientists are attempting to learn the whys and wherefores of long and short migrations.

You may think that mosquitoes will bite anything in sight. Studies are being made to find out whether certain kinds of animals attract certain mosquitoes. Blood specimens from engorged mosquitoes caught in the wild are matched with blood samples from birds and animals captured in the same area to see if any real preferences exist. It is also important to know the flight habits of the female once she has had a blood meal, and the type of shelter she seeks in which to rest.

The Ecology Section is concerned with the mosquito's environment and the effects of weather, tides, vegetation, soils and anything else that influences the mosquito's distribution and abundance.

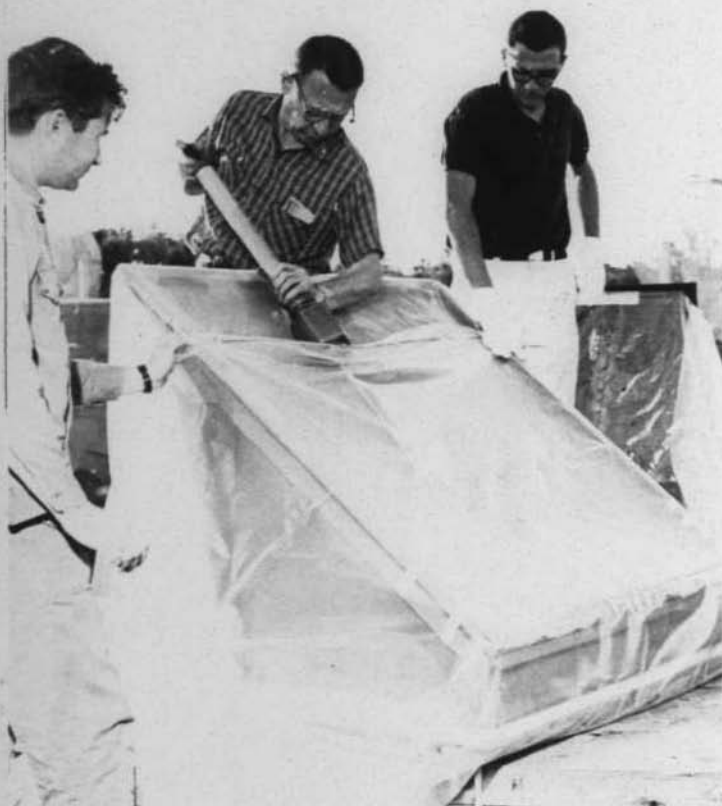
The Physiology Section studies the biological functions for a better understanding of the mosquito's behavior. Inquiries are being made into why some mosquitoes need blood to make eggs while others do not. This is tied up with nutrition and hormones which are also under study. The nutrition studies call for the rearing of larvae with precision methods in controlling temperature, light and diet.

The Biochemistry Section looks into the metabolic functioning of the female mosquito — such as what does she do with nectar meals and blood meals. Answers to such questions as to how long can a newly-emerged adult fly before needing food, how long can a mosquito live without nectar to feed on, and how long can a mosquito live on its fat reserve have been found in the laboratory. Now the Entomological Research Center needs to establish the answers in the field.

All of this research is related to control measures. Basic research takes time. The practical, temporary control measures of applied research are sought at the West Florida Arthropod Research Laboratory near Panama City. At this laboratory, the work is divided into two sections: mosquito control and control of biting flies. The scientists look for temporary measures, such as insecticides and land and water management, to control the biting insects. The application of insecticides in different concentrations and by different methods is studied to find the effect chemicals have on the larval stage in swamps and on adults in their resting places.

Temporary measures include:

The use of larvicides to kill mosquitoes in the early stages. These are applied by air and ground equipment. Applications must be thorough but heavy vegetation, winds and heat currents place limitations on this type of control.



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The use of adulticides — applied as diluted mixtures of chemicals and oil by aircraft, ground blowers or fogging machines — to kill adult mosquitoes in a specific area. Limitations, such as heavy canopy of trees, hot ground or wind, can restrict the effectiveness of these pesticides.

The methods of killing the villainous mosquito are not 100 per cent effective and there are always some mosquitoes left to assure more large broods — which also periodically must be destroyed.

Research on the control of chironomid midges, sometimes called "blind mosquitoes" is carried on at the Midge Control Laboratory in Winter Haven.

Microbe - The Killer

If mosquitoes were merely biting pests, they would be bad enough. But the fact that they carry disease is far more important. There are several arthropod-borne diseases which have proved fatal to man and animals in Florida, in addition to previously mentioned yellow fever, dengue fever and malaria but which, in contrast to these historic three, are still with us. These are the "arbovirus" encephalitides (sleeping sickness), St. Louis, California, Eastern, Venezuelan and Western. Another virus, Tensaw, has also been marked by epidemiologists as a potentially dangerous mosquito-borne disease.

These viruses are threats to man because the human population is rapidly spreading into areas which were until recent decades uninhabited. Now abounding in drainage ditches, catch basins, artificial water receptacles and impounded lakes and streams in addition to natural breeding places of mosquitoes, these areas add to the mosquito populations where men live.

Suckling mice are raised in the virology laboratory for the testing for arboviruses.



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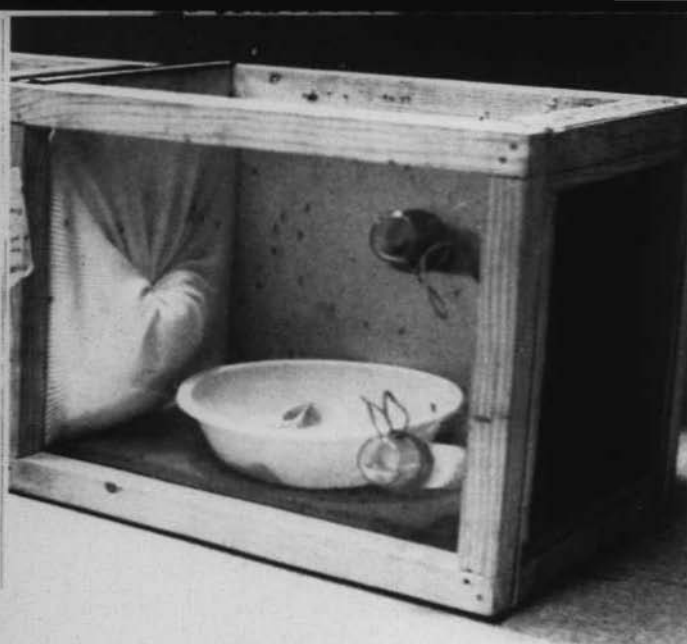
Statewide surveillances by the State Board of Health in Florida include work by

- the Division of Veterinary Public Health, in the Bureau of Preventable Diseases, which maintains chicken sentinel flocks around the state to detect any activity of encephalitis viruses and collects reports from veterinarians of equine encephalomyelitis and possible encephalitis in game birds;
- the Division of Epidemiology, also in the Bureau of Preventable Diseases, which collects reports of suspected cases of arthropod-borne viruses in humans from physicians, hospitals and County Health Departments;
- the Bureau of Entomology, which through a group of co-operators, collects, identifies and measures the density of adult female mosquitoes, and prepares pools of mosquitoes for viral studies; and
- the Bureau of Laboratories, which examines human and animal diagnostic specimens and mosquito pools for arthropod-borne diseases.

The Viruses

The St. Louis encephalitis virus, which was responsible for three epidemics in the Tampa Bay area in 1959, 1961 and 1962, involving some 300 persons and 50 deaths, is still a major threat despite the fact that it has not been detected in Florida in the past four years. The reason for this constant threat is that the mosquito *C. nigripalpus*, which has been declared the vector, is prevalent in both rural and urban areas of Florida. Migratory birds, or birds from the Everglades, are presumed to be the reservoirs for this virus. Older people, who have retired to Florida, have a marked susceptibility to the disease. Mortality averages one in three cases and survivors have neurological or emotional defects for two to three years following the illness. St. Louis encephalitis is a milder disease in younger people. The control of this disease is important to our tourist-oriented economy.





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A battery of tests is performed in order to isolate and identify arboviruses in the Encephalitis Research Center's virology laboratory.

Eastern encephalitis is with us all of the time and appears to circulate in a certain type of swamp mosquito, *Culiseta melanura*. This insect rarely bites man or mammals unless they wander too close to the swamps. Seven persons have been stricken in the last two years with this disease which has a 50 to 70 per cent mortality rate in national statistics. Although a vaccination for horses has been developed, there are an average of 100 equine cases caused by Eastern encephalitis each year. The virus also damages flocks of game birds, particularly pheasants and chukars — a type of partridge. The virus apparently stays localized in swamps but with housing projects being built closer to these areas, the danger to man is increasing.

California encephalitis is a newcomer to Florida and was not recognized prior to 1963. Four Florida persons (three of whom came from North Carolina after exposure there) have been attacked by the virus. Epidemics have occurred in Wisconsin, Ohio and Indiana during the last five years. Surveys show that five to six per cent of Florida's population have antibodies which indicate that they have been infected sometime in the past. The mystery is: Why are not more people ill with the disease? The answer is possibly because laboratory tests sensitive enough to detect the virus have not been found. Mammals, such as small ground squirrels and wild rabbits, have been reported as reservoirs for the virus in other parts of the United States but it is not known what the reservoir is in Florida. The vector mosquitoes are freshwater *Aedes*, and California virus has been found in them throughout the state.

The Venezuelan encephalitis is found repeatedly in the Everglades by teams from the U. S. Public Health Service. The virus appears to circulate constantly between mosquitoes and small rodents. About 27 per cent of the Seminole Indians, and a small number of rangers from the Everglades National Park, have antibodies which indicate they have been infected. Carried by the pest mosquito, *A. taeniorhynchus*, the virus produces widespread epidemics in Central and South America. Symptoms are similar to influenza. If the virus ever got into Florida's plentiful salt marsh



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The best method of preventing mosquito biting and possible infection is to:

- use repellents,
- wear protective clothing,
- avoid areas and times of mosquito activity (mostly at dusk or dawn) and
- get rid of standing water (breeding places) around your home.

mosquito, public health authorities would have a major problem on their hands.

Western encephalitis has been found consistently in Florida since 1960. Antibodies in birds show that it is present in the biological environment but to date the only mammals involved have been horses. In the Great Plains and the West, the virus has caused a great deal of sickness in humans and horses.

Lesser Microbes

The Tensaw virus, found in *Anopheles* mosquitoes, is presumed to have a mammal-mosquito cycle. Only one human case has been found in Florida despite the fact that it is abundant throughout the state and antibodies are found in three to five per cent of the population. The virus was also found in a dead fox submitted for rabies studies. It does not appear to present a human or animal health problem at the present time.

Yellow fever and dengue fever have ceased to be a threat to Florida although they are found in the Caribbean Islands. Yellow fever was last seen in Pensacola in 1905 and dengue made its last appearance in Miami and the Tampa Bay area in 1934. However, in 1964, two Florida residents came down with dengue fever after returning from Puerto Rico and Jamaica where epidemics were raging. The last case of malaria was contracted in southwest Florida in 1948.

Surveillance for Viruses

Utilizing reports from physicians, hospitals and County Health Departments in the Tampa Bay area, the Encephalitis Research Center keeps a watch over people and animals in the West Central area of the peninsula. Approximately 1600 persons have been screened for arthropod-borne diseases in the last four years. Because the viruses do not always produce illnesses in people, specimens are taken from approximately 400 healthy persons in the Tampa Bay area once a year to see if they have developed silent infections or antibodies.

Mosquitoes are collected at regular intervals from various kinds of traps geographically scattered throughout Pinellas, Hillsborough, Manatee and Sarasota Counties. Over one million mosquitoes have been trapped in the past four years and all species have been examined for viruses. The mosquitoes are separated into species and then separated by sexes. The females are put into pools of 50 and 100 mosquitoes, which are mixed together and inoculated into baby mice. If the mice become sick and die, the virus is believed to be present. If subsequent tests are positive, the viruses are isolated and identified. Seven viruses can be identified in the Encephalitis Research Center's virology laboratory; other types are sent to the U. S. Public Health Service, Communicable Disease Center laboratories, Atlanta, a national laboratory at the University of Pittsburgh, or the international laboratory at Yale University. In the past four years, three previously unknown viruses have been discovered in Florida in ticks, mosquitoes and cotton rats through the efforts of the Encephalitis Research Center.

Biologists at the Center in Tampa attempt to detect current and past virus infections in mammals, birds and amphibians. Chickens, rabbits and pigeons have been placed in cages in wild areas to detect arboviruses in wild mosquitoes. Wild animals and both resident and migratory birds are collected, bled, tagged and released. No harm is done to the birds and sometimes the same bird is caught repeatedly. Over a period of three years one small bird was caught and bled 18 times without harm by the biologists. The blood

samples from these animals and birds are examined for the presence of virus or antibodies to viral infections.

The State Board of Health, through its various bureaus and divisions, continues to look for ways of interrupting the transmission of viruses in the mosquito-bird-man cycle. This seems to be the most practical way of protecting the citizens of Florida from encephalitis.

What Mosquito Control Means to Florida

One of the most important key factors to the expansion of the Florida economy is mosquito control. Such men as Henry Flagler and H. B. Plant, who came to Florida with money to invest, looked to the State Board of Health for proper sanitary regulations that assisted in the building of hotels and the vast railroad systems. Today's tourist industry takes it for granted that the State Board of Health and the local mosquito control districts will not let it down by permitting either mosquitoes or the diseases they carry to take the state over again and keep it in chains as they once did.

There is no question that control of the mosquito helped open up the state to the planting of citrus, mining of phosphate, cutting of virgin pine and cypress and the starting of the cattle industry. Most of all, the control of arthropods and arthropod-borne diseases opened subtropical Florida to people from all over the United States and the world who come to enjoy the climate, good fishing, excellent beaches and unsurpassed beauty.

The State Board of Health, mosquito control districts and the Boards of County Commissioners are spending approximately \$8 million annually for control of mosquitoes and other forms of arthropods. Fifty-seven mosquito control districts, operating in 54 of the 67 counties, applied in one year over three million gallons of insecticide formula by air and ground fogging and spraying to



A rabbit (1), which has been used as bait to attract mosquitoes, is removed from a trap in a swampy area. (2) Mosquitoes, which are sucked by a vacuum into a bag before they can attack the rabbit, are removed from the trap. (3) The entomologist checks the operations of a tent trap.



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It is apparent that time, effort and money expended in controlling the mosquito and the diseases it carries have brought results. But further research and control are necessary. The State Board of Health must maintain protection against mosquitoes and increase its strides in research in order to protect the health and comfort of Florida residents and tourists.

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Metabolism—the chemical process by which food is burned in the body to release energy.

Microbes—a microorganism (for example, virus, bacteria, rickettsia) which may cause disease.

Reservoir—a creature or animal in which a virus lives and multiplies without doing damage to the host.

Vector—an agent, such as a mosquito, capable of transmitting a disease from one host to another.

Virus—a submicroscopic infectious agent which can cause disease.

FLORIDA HEALTH NOTES



VOLUME 59 — NO. 6

YEAR OF CHANGE: 1966

JUNE 1967

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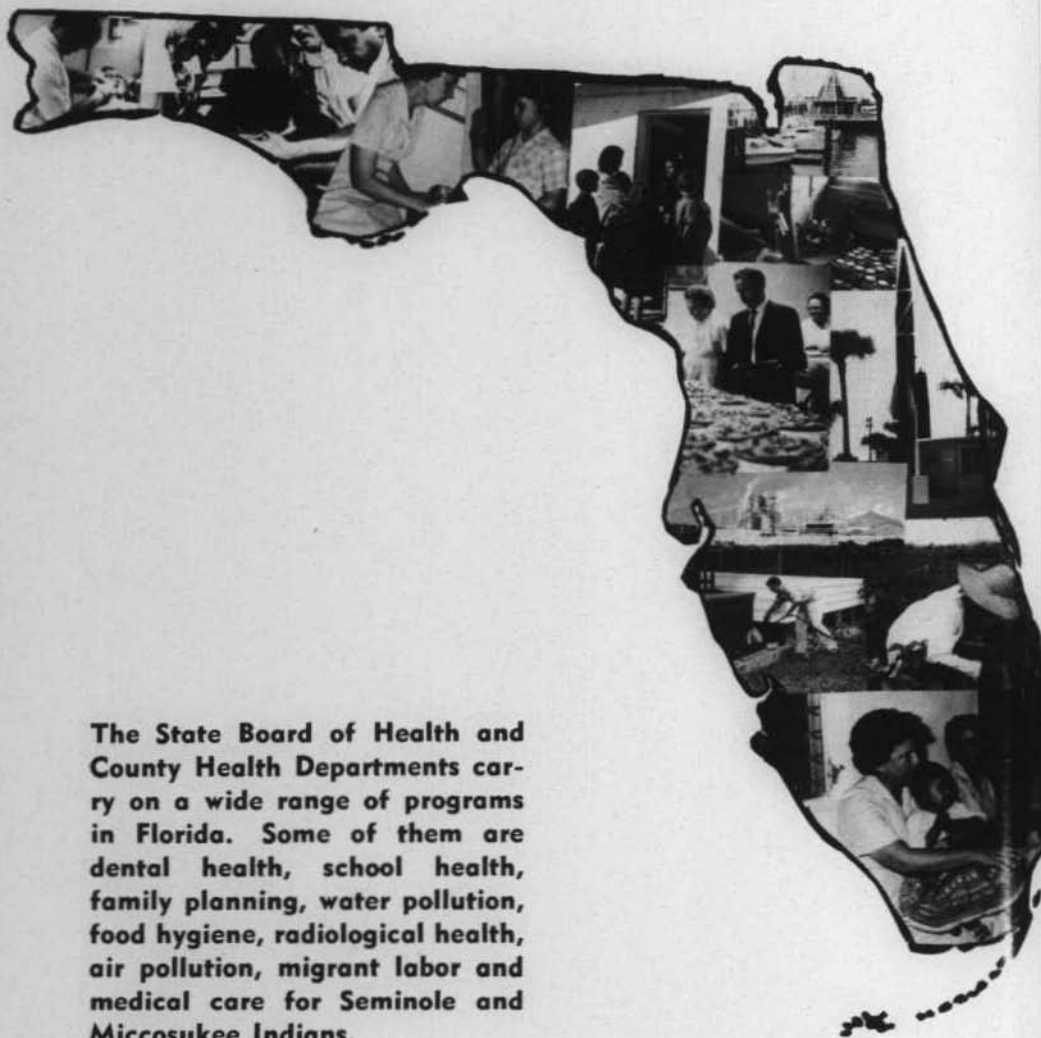
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(Cover photo) Maternal and child care has been at the heart of Florida's public health program for many years. Five new Maternal and Infant Care projects, covering 40 per cent of the population with intensive care for high risk, indigent, expectant mothers and their children are located in the state.



The State Board of Health and County Health Departments carry on a wide range of programs in Florida. Some of them are dental health, school health, family planning, water pollution, food hygiene, radiological health, air pollution, migrant labor and medical care for Seminole and Miccosukee Indians.

Year of Change: 1966

The year of 1966 will go down in Florida's public health history as a year of change, a year of new horizons and a year of accomplishments.

Following a custom of long standing, this June issue of **Florida Health Notes** is devoted to a review of the State Board of Health's **Annual Report** for the previous year. The original report contains over 10 times as many pages as does this magazine; we, therefore, will make no pretense of cramming a comprehensive condensation of that document into these pages. Leaving the routine, the technical, the prosaic to be found in the larger document, we will seek out the highlights, the new and the most important for inclusion here.

Public health, marching beside private medicine, has conquered enemy after enemy in a few short decades. To our grandparents public health meant almost futile battles against deadly plagues and the grossest of sanitary abuses. Today, with polio gone, the great killer fevers are mere fractions of what they were, and public sanitation the rule rather than the exception. Public health means prevention of birth defects—or of too many unwanted births; rehabilitation for stroke victims; screening for eye, ear and dental defects in schools; and immunizations for small children. Eradication of diseases, such as measles, is talked of as a goal—not a dream.

But the social diseases are creeping ahead in a changing society; stubborn old tuberculosis still fights hard to hold its own. Cancer, heart, lung and vascular diseases, and accidents now threaten the lives of many people who in earlier times would have died of communicable diseases at a younger age.

So, in 1966, the administration of Medicare, the development of five new Maternal and Infant Care projects, the stubborn resist-

ance of venereal diseases and the increasing concern over water and air pollution kept the state and county official health agencies busy.

"The year saw the beginning of a trend that may result in sweeping changes in public health practices," said State Health Officer Wilson T. Sowder, M.D. He pointed out that the "new or expanded programs involving comprehensive care" call for new relationships with physicians, dentists, hospitals and other agencies. He saw more disciplines, such as social service, coming into the picture, recruitment and training problems to be solved, and a greater responsibility upon the shoulders of all public health workers.

Mothers and Children

Mothers and babies have always been at the heart of the broad public health program of the state and nation. In Florida this year even greater attention was being paid to them. The Maternal and Infant Care programs, in which high risk mothers-to-be were taken under close and costly surveillance, provided full and complete medical care for indigent mothers and infants. In the predictable decrease of retardation and malformation alone, these programs will pay their way. The effect on families relieved of the burden of caring for imperfect children is incalculable.

The program to promote family planning is underway in all but one county. The distribution of contraceptive information and specific aids has, nevertheless, reached only a tiny fraction of the

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A laboratory technician reads a PKU test in the search for potentially retarded infants. This program was set up in the State Board of Health following the 1965 Legislative session and now reaches some 70 per cent of infants born in Florida.

women who need these benefits. A vast program of education and motivation is just beginning.

Hospitals were the birthplace of 97 out of every 100 children born in Florida this year. But the lack of fathers cast a social shadow over more than 13,000 of them, while nearly 4000 new mothers were under 17 years of age. However, in spite of the trend toward younger motherhood, there were only 40, or one-third fewer maternal deaths than 10 years ago. Florida welcomed 102,542 tiny new citizens of whom 27 of every 1000 died in infancy. This is a new low mark. Authorities were still not satisfied with the rates of immaturity and stillbirth. But the efforts to bring all newborn infants under phenylketonuria (PKU) testing ran about 70 per cent of the total births. Meanwhile, for all mothers, the increased day care facilities and number of home health aides made life look brighter when trouble came.

For its children Florida did much. The many Headstart Programs were designed by the Office of Economic Opportunity to give underprivileged preschoolers a chance to catch up with other

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For its children Florida did much. The many Headstart Programs were designed by the Office of Economic Opportunity to give underprivileged preschoolers a chance to catch up with other

youngsters in social behavior, kindergarten subjects and health. Much medical and nursing assistance was given the programs by the County Health Departments. Agricultural migrant youngsters were included where possible.

Florida children received many thousands of vision, hearing and dental screenings. Parents of those needing correction were referred to private physicians and those who were underprivileged were sent to official or voluntary health agencies.

Expanding Nursing Services

The year saw a great demand for public health nurses. The Maternal and Infant Care projects and the 57 local agencies handling outpatient Medicare cases can pay somewhat higher

Medicare brought home nursing care to many of Florida's elderly persons. Twelve of the 59 home health service agencies which operate under Medicare provide such care with home health aides.



salaries than the County Health Departments, thus increasing the problem for these latter agencies. The workload increased for the regular staff nurses because there was so much to be done in training home health aides and in the work of adjusting present organizational structures to the new programs.

The state's midwives continue to decrease in number and to increase in professional stature. Only 168 of the several hundred who were licensed a decade ago remain active. They constantly attend training sessions to upgrade their practice. Eleven counties now have no midwives at all. This reflects the trend toward hospital delivery of babies at all economic levels.

Agricultural Migrant Laborers

Migrant camp improvements and health surveillance continued as in years past but the knotty problem of continuity of care from state to state moved closer to solution. Some 2000 migrants received this service as interstate understanding, cooperation and methods improved.

Narcotics

Narcotic inspectors found 12 cases involving the misuse of LSD by irresponsible persons—and no state law to cover them. They went to federal courts; the Legislature has been advised of the situation.

The bureau expressed alarm over the steady increase in the abuse of barbiturates and amphetamines, and promised an increasing educational effort in this field. Its report indicated a marked decrease in the number of health professionals involved in narcotic matters.

Arthropods and Arboviruses

The state and federal governments spent \$3,500,000 on the program to inspect a million Florida homes for *Aedes aegypti* mosquito, the one that carries yellow fever and breeds around human habitations. They found 19,000 places needed anti-mosquito treatment. Meanwhile another \$8,000,000 from state and local sources went into dredging, ditching, impounding, flooding, draining, spraying, fogging, dusting, pelleting and other measures to control the pests



Did you recognize this as a hospital? It is. Florida has 54 packaged hospitals strategically located and stored around the state ready to be unpacked. They will provide a disaster-stricken community with a complete 200-bed facility.

that annoy tourists and natives and carry many diseases, including the various arboviruses.

An increase was noted in the number of unlicensed pest control operators. Their operations are illegal and the public was asked to report solicitations by unauthorized persons to the police. The law requires the name and Florida business address of the company to show plainly on the truck.

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encephalitis viruses in birds and animals, ready to be carried by mosquitoes to humans.

Health Education

The State Board of Health library increased to about 23,000 volumes of books and bound journals. The audio-visual staff sent out more than 12,000 films to schools and organizations; close to half a million pamphlets were distributed; the average issue of **Florida Health Notes** went to 21,000 a month; and radio and television health announcements were dispatched to the state's stations regularly throughout the year. Exhibits numbered 44, with 558 other visual pieces, ranging from speakers' name plates to large wall charts, made.

Dental Health

"Serious understaffing crippled the work with indigent children," states the report of the Bureau of Dental Health. Mobile units stood idle waiting for dentists and hygienists to operate them in areas where no dentist was practicing. But on the brighter side, 39 dental clinics were operated in County Health Departments; the number of cities with fluoridated water rose to 35—thus giving a million persons this great benefit. The program to educate dentists in identifying signs of oral cancer paid off with 17 such discoveries. Other patients are still under diagnosis.

Preventing Accidents

Experts studied auto crash injuries, poison control education, snake bites and drownings during the year. Certification of ambulance drivers and attendants saw 1001 persons approved after receiving first aid training. The Medical Self-Help courses, which teach first aid and survival in disaster where no medical aid is available, have reached 95,000 persons to date.



Did you recognize this as a hospital? It is. Florida has 54 packaged hospitals strategically located and stored around the state ready to be unpacked. They will provide a disaster-stricken community with a complete 200-bed facility.

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OUR 75th AN

With this month, FLORIDA HEALTH NOTES observes its 75th year. In June of 1892, the three-year-old Florida State Board of Health brought out a BULLETIN as its official publication. The next issue (July 1892) the booklet was given the name which it bears today. It was printed until 1900 when publication was suspended. A new series was started in 1906 and the booklet has been in continuous publication since then except for the period February 1919 to March 1922.

Shortage of personnel, for not publishing.

Joseph Y. Porter, M.D. Officer, stated in the presenting this little pamphlet of Florida, the hope is the means of stimulating manners, not only will arouse those who protection of the public active measures."

Laboratory Services

Florida's public health laboratories made more than 2,700,000 tests for doctors, dentists, veterinarians, engineers and other persons needing scientific analysis of specimens or other materials. A brand new building in Tampa replaced the ancient, small edifice which had housed that regional laboratory since 1910. It was named for Homer Venters who had directed the laboratory activities there for 48 years, and who at his death in 1965, had served the State Board of Health for 50 years.

Chronically Ill and Aged

Heart disease remained the state's number one killer. Emphysema and chronic bronchitis death rate more than doubled in the past 10 years to become one of the leading causes of death. Both conditions were linked to smoking, which the State Board of Health, through affiliation with the Florida Committee on Smoking and Health, fought vigorously with all the educational means at its command.

ANNIVERSARY

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The purposes of FLORIDA HEALTH NOTES have not changed in the past 75 years but they have been expanded to include a wider range of health problems and programs than Dr. Porter ever dreamed.

The next issue will be devoted to interesting facts about health from 1892 to 1900—the first eight years of FLORIDA HEALTH NOTES' existence.

The 27 tumor clinics, which are affiliated with the Cancer Control Program, were used as referral centers by Florida physicians. Highly skilled specialists gave early diagnosis and treatment—the key to cancer survival. Some 21,000 women were examined for cervical cancer and over two per cent of this number were referred for further diagnosis.

A total of 7825 persons received assistance with heart problems. More than 1200 were given rheumatic fever drugs. Others were served by the clinics which were staffed by specialists who served without charge, and which operated with help from the Florida Heart Association. Educational activity was carried on to tell the public that smoking, inactivity, obesity, hypertension and accumulated cholesterol might contribute to heart disease. Group therapy for the rehabilitation of stroke victims was tried and found to be successful.

A Health Profile Screening Program for persons over 35 years of age was carried on in Charlotte County, a retirement center,



A food processing plant worker expresses herself as she receives a tuberculin skin test from a public health nurse. Thousands of skin tests and X-ray films were made in the search for those suffering from tuberculosis.

with interesting results. Of 1824 persons examined, 706 were referred to their private physicians for health reasons. About 10 per cent were suspected of having diabetes and 2.5 per cent of having glaucoma.

One of the state's public health programs is the giving of free insulin to the indigent diabetics. There were 3309 persons this year who received this service. Over 32,000 were screened for diabetes with 1167 referred to physicians for further diagnosis. Fourteen lay societies were active. They helped to educate diabetics and the public and conducted a very successful camp for diabetic children. **Timely Topics**, a monthly bulletin for those suffering from this disease, and their families, went to 4000 copies each issue.

Just under 100,000 persons were screened for glaucoma and 1309, over three per cent, found positive. For these, blindness will be delayed or prevented because they were found in time.

The approval of hospitals and nursing homes for Medicare took a great deal of time and energy, and involved many technical and scientific personnel in the health facilities and services programs. At year's end, 172 of the state's 189 licensed hospitals (94 per cent of all hospital beds) were approved for participation in Medicare. Of 350 nursing homes, 89 were ready to handle Medicare patients. A total of 57 home health service agencies was approved to give home nursing care. A new kind of health worker, the home health aide, had to be trained by the dozen for this work.

Florida's previously existing programs for medical care of persons unable to pay for the services cost around \$11,000,000, but this was a \$1,000,000 short of the previous year, due to the shifting of many patients to Medicare.

Communicable Diseases

The Tuberculosis Control Program, one of the oldest in the state's public health history, saw a change in operation during the year. Although the number of new cases remained about the same, another tuberculosis hospital, at Tallahassee, was closed leaving the state with two where there were five a mere decade ago. Better casefinding has kept up the influx of new cases but home care with new drugs has made it possible to discharge the patient much earlier.

Health authorities discovered a new disease in Orange County. Several cases of an infection, which they called amoebic encephalitis, were found and brought under study and treatment. Four persons apparently contracted the disease while swimming in freshwater lakes.

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and physical after effects. With the new vaccine the federal and state governments are determined to eradicate measles. Much effort was made during the past year to bring this fact to public attention. **Only the cooperation of every family in the state can make measles eradication possible.**

Venereal diseases in Florida have shown a steady increase for some years, and only in 1966 was there a tendency to level off with 1890 primary and secondary syphilis cases.

Environmental Health

The work of environmental health never sounds spectacular. The work of sanitarians and sanitary engineers is long and hard. It involves millions of dollars from federal, state and local sources and when completed is often underground and out of sight. Some \$44,000,000 worth of new or expanded sewerage systems were approved during the year. About 700 water works, pumping 118 million gallons per day of clean water into Florida homes and costing over \$36,000,000, went into operation.

There were 85 new incinerators built to help take care of solid waste disposal which is becoming year by year a more serious problem within the state.

Florida's county sanitarians were kept on the move. They permitted 110,000 trailer spaces in 2523 parks; many were improved over the previous year with better water and sewer attachments. The state's 752 food processors were found concentrating on prepackaged, ready-to-eat foods. There were 383 camps, mostly for migrants, needing supervision. Some were excellent; some so poor as to be condemned for human occupation. Twelve rendering plants were making fertilizer and animal food from carcasses. Some had salmonella problems which had to be solved and all plants fought a constant battle with flies and odors.

Water and food distribution to trains, planes and ships had to be scrutinized; reports had to be made to the federal agencies. More than 30,000 food establishments serving food and drink, packaged or on a plate, had to be visited regularly. Training schools were held for food service workers.



Air pollution, such as being produced by this asphalt plant, continues to be one of the environmental health problems faced by the State Board of Health.

The state shellfish industry, concentrated in but not confined to Franklin County, was operated by 166 permitted shellfish houses employing some 1500 health card holding workers.

Florida sanitary officials have been battling the use of septic tanks in crowded areas for years. Recent federal regulations, requiring County Health Department approval before septic tanks could be substituted for central sewerage in federally mortgaged housing, have helped a lot. Half the new homes in 34 subdivisions established during the year were put on central sewerage systems.

Radiological and Occupational Health

The radiological and occupational health workers found they had 473 radioactive materials licenses in effect at the year's end. There were 7697 X-ray machines registered, of which 810 were surveyed for safety factors. The workers checked air, water and milk samples for radioactivity. They examined post office trucks, scuba divers' air supplies and phosphate plants for air impurities. On

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This little baby is one of the 102,542 infants born in Florida in the past year. He is also fortunate in that he was one of the 97 out of every 100 born in a hospital.



request, they checked a high school laboratory's liquid mercury for safe use by the students.

Air and Water Pollution

The twin problems of air and water pollution grew steadily and received an increased amount of public attention at all levels—from Washington to the citizen's backyard.

The activity surrounding these problems could not be reported in dollars or gallons or number of hours spent in serious discussion. The state and county engineers, sanitarians and chemists devoted an enormous amount of time in field laboratory examination to determine the nature and scope of these matters. Scientists, engineers and public officials worked hard with industrial leaders to try to find ways to continue the manufacturing of necessary products. The quest to add desired multi-million dollar payrolls to the

economy continued; yet it is necessary to do this without spewing noxious fumes and smoke into the air and abominable mixtures into the lakes and streams. Many people in both government and industry consider pollution control as primarily a health matter and continue to look to the State Board of Health and County Health Departments for leadership and enforcement of the provisions of the law which could, with wisdom and prudence, bring solutions to many of these problems.

Computers in Vital Statistics

With computers doing in hours the calculations that used to take weeks, giant steps were taken in the processing of vital statistics and related material. A small reel of tape was prepared to convey to the Motor Vehicle Bureau in Tallahassee the names of those licensed drivers who had died during the year. Similar tapes or stacks of IBM punch cards now carry necessary information to the Department of Public Welfare, Social Security Administration and other state and federal agencies. A procedure involving the sorting of one-half million names that used to take 17 weeks was carried out this year in 17 hours.

The Bureau of Vital Statistics disclosed that Florida's population on July 1, 1966, was 5,941,000, making the state the ninth most populous, growing at a rate of over two per cent per year since the 1960 census. A population equal to that of Hendry County, 11,300, has been added to the state every 30 days. Two-thirds of this has occurred through migration, a large amount of its involving retirees, the remainder representing the difference between births and deaths. The state is now considered to be 82 per cent white, with 12½ per cent of the total population over 65 years of age.

The state recorded 102,542 births, 61,945 deaths, 52,425 marriages (an all time high) and 25,801 divorces. Adoptions at the rate of 125 a week totaled 5554. The 10 leading causes of death, in order, were: heart disease, cancer, stroke, accidents, influenza and pneumonia, diseases of infancy, emphysema, aortic aneurysm, arteriosclerosis and diabetes.

Personnel and Research

Personnel and recruitments were an increasingly serious problem during the year because state salaries have not kept pace with those of industry, the Federal Government and other states. The need for upper grade technical people and for those in top administrative posts continued.

A total of \$14,000,000 in federal and state funds went into 42 research and demonstration projects during the year. They ranged widely in subject matter and involved some 1500 employees. At the year's end, 18 more such projects had been applied for. Included in this work were such studies as the long and short range effects of pesticides on humans, and a sort of "cafeteria" in which mosquitoes were given a choice of host, or biting place, to see to what extent they preferred animals, birds or man.

The Important is Often Dull Reading

The above have been a few points of interest taken from the State Board of Health's **Annual Report** for 1966.

These points were not necessarily the most important things that could have been told because so much of that which is most important is both routine and dull in telling. The daily work of physicians, dentists, nurses, sanitarians, vital statistics clerks and dozens of other technical people goes on day after day and month after month protecting the public from a myriad of health dangers and nuisances. These people are dedicated workers. The nature and arduousness of their tasks are such that mere money would not attract them to such a calling.

But the people of Florida's public health agencies have had for the most part a good year and are now well started on what they hope will be another.



VOLUME 27—NO. 1
JULY 1957

Public Health in the 1950s

FLORIDA STATE LIBRARY

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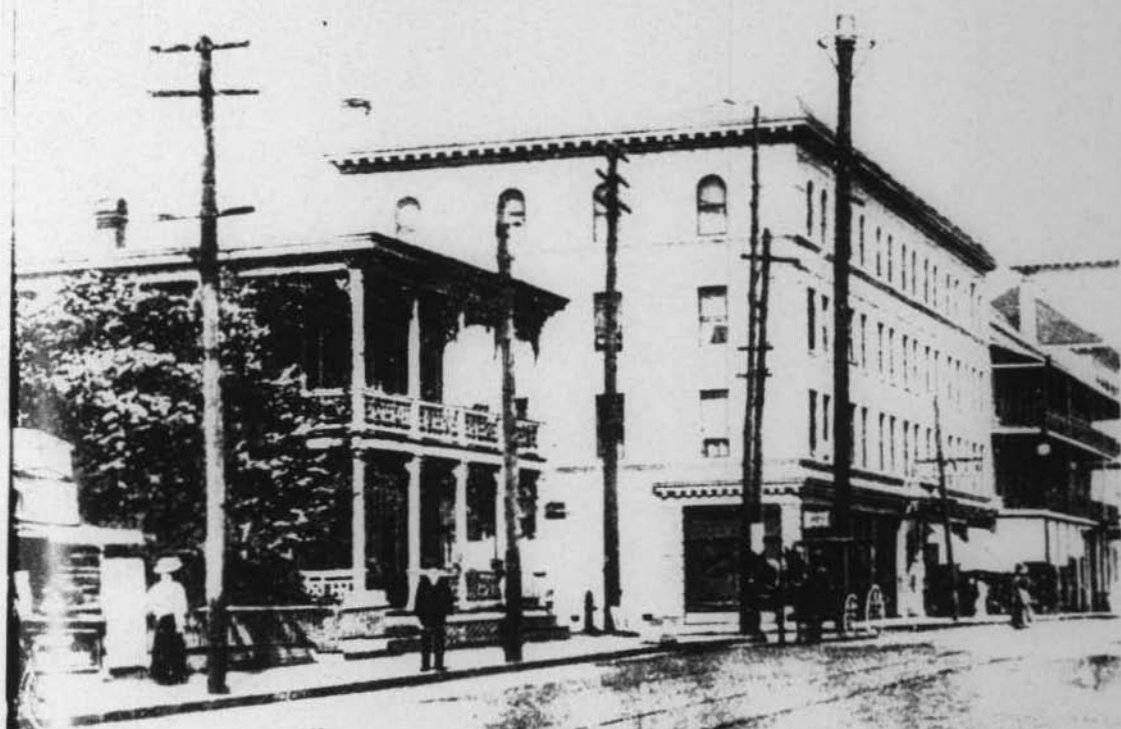
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FLORIDA HEALTH NOTES



JACKSONVILLE, Fla. Hogan Street, Showing Park and Windsor Hotels.

VOLUME 59—NO. 7
JULY 1967

Public Health in the 1890s



Florida was the base for American troops operating in Cuba during the Spanish-American War in 1898. The State Board of Health was concerned with diseases soldiers brought back from the Caribbean.

Public Health in the 1890s

Seventy-five years ago last month, June 1892, a fledgling Florida State Board of Health began publishing a little bulletin to disseminate reports of the state's health programs and to educate the people of Florida in the ways of hygiene and sanitation.

That eight-page bulletin was **Florida Health Notes**. While there have been many important changes in public health in Florida, the purposes of our publication have not changed. We are still telling Floridians about public health programs and the ways to better health.

Florida Health Notes was published for eight years but because of lack of time and clerical help, publication ceased until June 1906 when a new series began. The magazine has been published continuously since that date with the exception of three years from February 1919 to March 1922.

Because of the break in publication and because of a change in the public health picture after 1900, this issue of **Florida Health Notes** will tell you about public health in those first eight years—from 1892 to 1900. It was between 1900 and 1906 that public health officials realized that the mosquito was the carrier of yellow fever. Disinfection and fumigation, which were believed to be important in the control of disease, were becoming less important although they were continued for some time after the period under discussion.

Public health in the 1890s was concerned primarily with communicable diseases and sanitation. The collection of vital statistics, strongly advocated by the early State Board of Health, was con-

(Cover photo) Sanitation in the cities was one of the major concerns of the Florida State Board of Health in the 1890s. Long skirts were thought to carry disease into homes and sweepings from city streets were believed to contribute to the spread of tuberculosis and diphtheria.

sidered unnecessary by many physicians and laymen. People had many strange ideas about health and the cause, spread and cure of disease. But they were doing the best they could with the knowledge they had at that time. The theory of disease-carrying germs was new and many people were skeptical of such "new-fangled ideas."

Communicable diseases were so prevalent that public health authorities could not be concerned with maternal and child care, dental health, narcotics, heart disease, cancer and accident prevention, although some of these subjects were mentioned in **Health Notes** in those days. Authorities were more concerned with cesspools under bedroom windows, pigsties too close to homes, filthy stables and disease-carrying dust.

The basic purpose of public health, as expressed in an early issue of **Health Notes**, was to prevent disease and educate the people.

The Beginning of Public Health in Florida

The State Board of Health was formed in 1889 following the 1888 yellow fever epidemic in Jacksonville which saw 10,000 persons out of the 26,800 in Duval County flee the area in terror. At this time there were independent county and city boards of health. These agencies were more concerned with protecting their own areas against diseases than in a statewide program and they quarantined themselves against everyone who was not "acclimated" (immunized). But yellow fever and other diseases persisted.

Several attempts by legislatures to form a statewide health agency failed, but under the direction of Governor Francis P.

FLORIDA HEALTH NOTES

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Fleming a special session of the State Legislature was called and the State Board of Health was created with Joseph Y. Porter, M.D., of Key West as the State Health Officer.

It was Dr. Porter who started **Health Notes** in 1892 and was the editor and major contributor during its early years. The information for this issue is taken from copies of those early **Health Notes** now on file in the State Board of Health library.

Preventing Disease

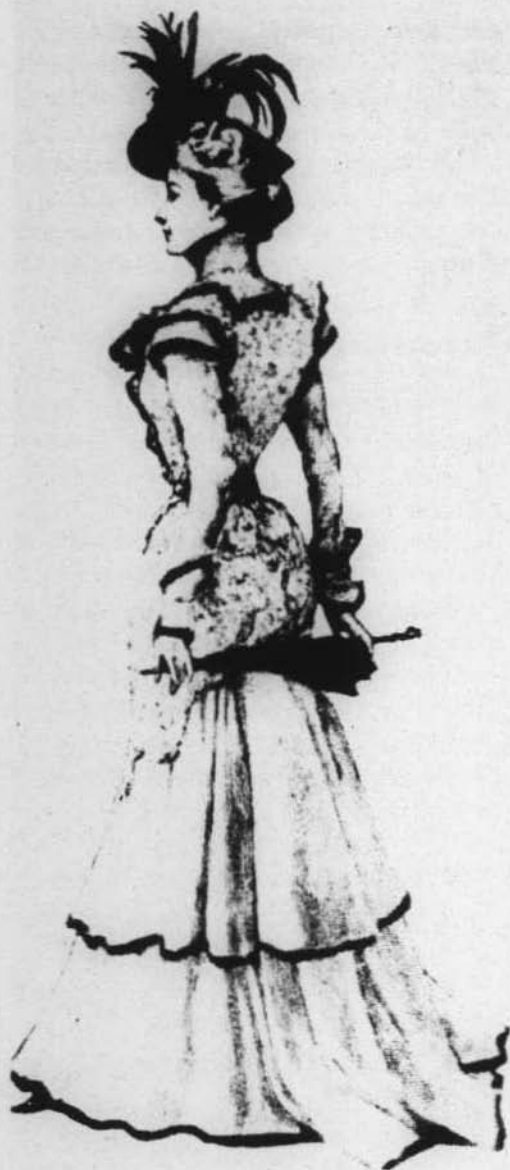
The State Board of Health from the beginning conceived that its major duty was the prevention of diseases, not just the curing of them. Through its official publication it continually urged Floridians to put forth the same protection for their lives that they did for their property.

Whereas the cure of the sick was the responsibility of physicians, members of the State Board of Health felt that public health was everybody's medical responsibility. Patients who cooperated (more or less) in the work of health and the curing of diseases were not ungrateful to the practitioners of the healing arts. But those who were in danger of becoming patients did little to fight to keep disease "from their door." People were known to:

- laugh at bacteria and mock at microbes,
- carry germs of disease in their clothes from house to house,
- sweep up dust of the streets in their trailing skirts,
- take little or no pains to disinfect the excreta from infectious cases in their homes,
- oppose with influence the erection of hospitals for infectious diseases,
- impede the efforts of medical officers of health and inspectors of meats and foods, and
- disregard authorities who condemned the wearing of corsets.

While urging the cooperation of the public in health matters, the State Board of Health was poorly financed and beset by opposition. During its first quadrennial term (1889-1893), receipts were \$114,683. Salaries and operating expenses did not exceed \$60,000

Public Health officials frowned upon women's fashions, especially the corset, an instrument of torture which produced the fashionable wasp-like figure.



for the four year period. Most of the balance of the funds went for a steam and vapor disinfecting plant, a quarantine station of "modern design" and a quarantine patrol boat.

Dr. Porter expressed the hope that the Legislature, "should it give a careful examination of the accounts of the Board of Health,"

would find that the funds were "carefully managed and expended with due regard to economy and efficiency." The questions, "How much will it cost?" and "Can the state afford it?" were asked more often than "Without this protection (of the State Board of Health), how many lives may be taken by an epidemic or what damage would the commercial interest experience?"

The State Board of Health was always consistent in its acts and teaching. It tried to advise and suggest only those measures in hygiene and sanitation which could be practicably applied by the people of Florida.

In an effort to tell what the health picture was in Florida, each issue of **Health Notes** carried reports from the counties. The report for March 1896 stated "exceptionally good health," although influenza or "La Grippe" prevailed to some slight extent in certain counties, while mumps, measles and pneumonia were also existent "though not so general as theretofore reported." A case of smallpox was reported in Escambia County in March 1896 but the disease did not spread.

For some years after the yellow fever epidemic of 1888, people were somewhat timorous about remaining in certain parts of the state through the summer months. But by the end of the 1890s, this feeling was overcome and **Health Notes** declared that "Florida summer is to the favored resident of the state a thing of beauty and joy forever, while its ever-refreshing breezes so tempering the heat of the sun while its healthfulness is an established fact."

An Interest in Education

Educational efforts were made by the State Board of Health to interest Floridians in their own health, the health of their neighbors and the community in general. They were told that they owed themselves good health and to "live so that health may not be impaired, strength wasted and life prematurely shortened."

As good citizens they were asked to guard jealously the health of their neighbors by not permitting cesspools or privy vaults under a neighbor's bedroom window to poison the atmosphere

and concealing a case of measles or whooping cough, which could cause grief, to say nothing of expense or anxiety, to neighbors.

The State Board of Health and physicians continually carried on a campaign to educate the people in such sanitary matters as:

causes and sources of sickness,
importance of clean food and pure water,
danger of contamination of wells,
value of drainage,
importance of dry and clean cellars,
value of ventilation, sunshine and fresh air,
ways in which disease may be conveyed from one person to another,
importance of perfect disinfection and the necessity of knowing the proper way to accomplish this, and
necessity of isolation and quarantine.

Communicable Diseases

The legislative act that set up the State Board of Health repeatedly mentioned "yellow fever, smallpox and cholera." Other diseases and sanitation were given less priority and, perhaps because of this, **Health Notes** continually urged the county boards of health to report incidents of all communicable diseases, including such illnesses as diphtheria, scarlet fever and measles. Despite this, however, many county boards kept failing to make complete reports.

Campaign Against Rumors

Because of the lack of rapid communications, a state law was passed against the spreading of false or malicious rumors or reports concerning the existence of any infectious or contagious disease. Punishment consisted of up to six months in prison or fines not exceeding \$1000.

Even as late as the 1890s, people thought of epidemics as "visitation of Providence" but "Providence" usually visited the unclean with pestilence much oftener than it did the scrupulously clean. People who tolerated dangerous nuisances, such as cess-pools, unsanitary cellars — containing decaying vegetables and fruits—and stables too near the house, too often had to pay the penalty with typhoid fever, diphtheria and other filth diseases. Fevers were often prevalent in country districts which should have been healthy.

Prior to the formation of the State Board of Health, yellow fever, smallpox and cholera were rampant in Florida, but by the end of the 1890s these diseases were nearly under control through quarantine, disinfection, sterilization, smallpox vaccination and improved sanitation.

The Yellow Jack

Yellow fever (also called Yellow Jack) was constantly feared in Florida during the 1890s. Havana, Cuba, just across the Florida Straits, had 470 cases with 111 deaths from the disease in the one month of July 1893. Due to ships arriving in Florida ports from Havana, the State Board of Health maintained surveillance of all foreign shipping by inspection stations at Key West, Punta Rassa, Boca Grande Pass (Charlotte Harbor), Anclote Keys, Cedar Key and Apalachicola; quarantine stations were located at Mullet Key (Tampa Bay) and Santa Rosa Island (Pensacola Bay).

At these stations, personal effects of crews and passengers, such as baggage, clothing, eating utensils and letters, were inspected, sterilized, fumigated and disinfected in the search for **fomites** which were thought to carry communicable diseases. Prevention of the introduction and spread of **fomites** into any port of the state was one of the principles which the State Board of Health strenuously enforced.

In one particular case recorded in **Health Notes**, the State Health Officer stood up to the Federal Government over the enforcing of the state's quarantine laws. In 1896 the Spanish cruiser, **Infanta Isabel**, coming from Havana, sought to enter the Port of

Key West but was forbidden to do so without first going through inspection, disinfection and sterilization of the personal effects of the officers and crew. The cruiser refused, withdrew and sailed directly to Tampa where late in the afternoon she passed the quarantine station without stopping.

The next morning the quarantine launch sighted and boarded the cruiser and forced her to return to the quarantine station for inspection. Because the cruiser had had many cases of yellow fever aboard during the previous year and no disinfection for **fomites** was practiced, the **Infanta Isabel** was placed in quarantine and subjected to the same treatment as any vessel from a foreign infected port. The Federal Government asked for the release of the cruiser but Dr. Porter insisted upon enforcing the state's laws.

It was a matter of concern to the physicians of Florida, and particularly to those residing on the coast, that they be able to speedily recognize a case of yellow fever in its mild form as each summer season brought anxiety because of the nearness of the home of yellow fever—Cuba.

"How can one tell a mild case of yellow fever in its incipiency?" was frequently asked, but in the August 1893 issue of **Health Notes** the State Board of Health acknowledged that it had no satisfactory answer.

When yellow fever did occur, steps were taken to isolate and guard the premises where a death occurred. The State Health Officer took official charge of the investigations and autopsies which were performed. House-to-house investigations were made to trace every rumored suggestion as to how yellow fever might have reached the area.

Although epidemics of yellow fever raged in almost all of the countries south of Florida during the 1890s, few cases developed in the state. This was believed due to the careful inspection of all vessels and rigid enforcement of the quarantine regulations. Despite the precautions the last epidemic in the state occurred in Pensacola in 1905 with 572 officially-reported cases and 82 deaths. The last case was Gilbert A. Hovey of 821 North 7th Avenue, who was stricken November 26, 1905, and died on December 4.

HELMBOLD'S FLUID EXTRACT BUCHU.



Seen gathering Buchu Leaves at the Cape of Good Hope, for
H. T. HELMBOLD, Druggist,
594 Broadway, New York.

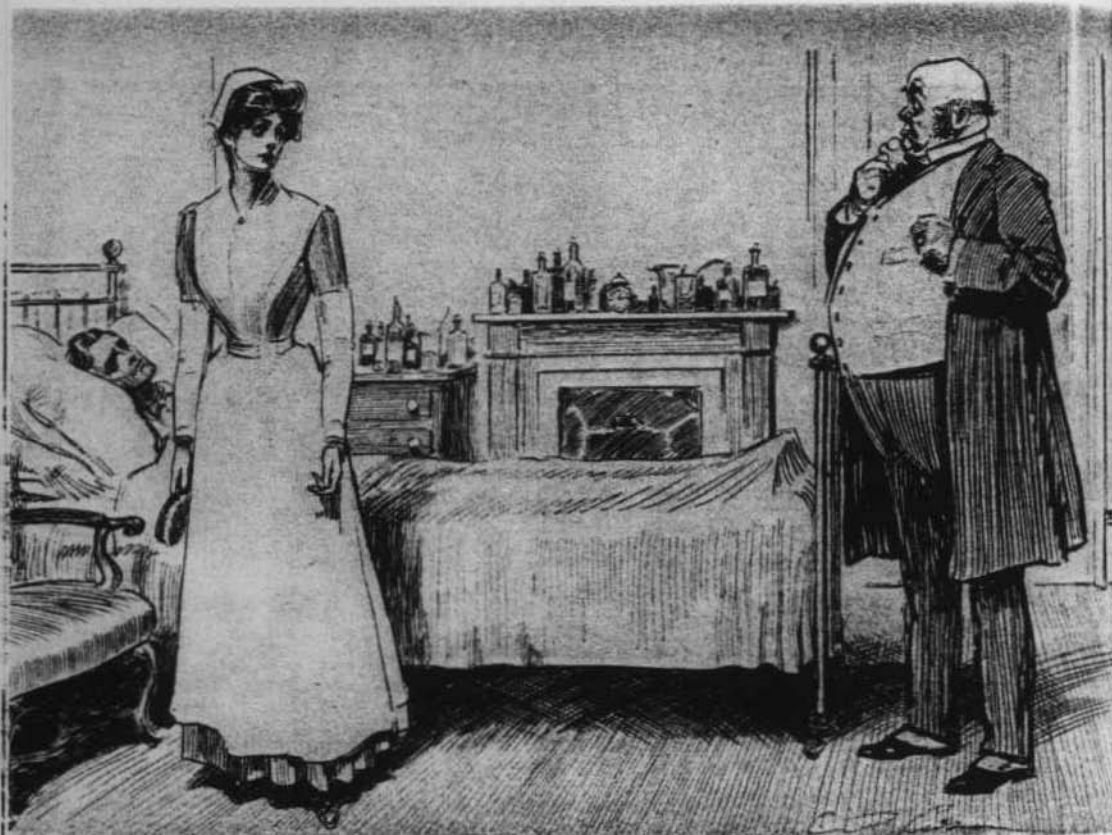
Advertisements, including medicinal, took the exotic approach during the 1890s.

Smallpox

Despite the fact that smallpox, a disease which had swept away one-sixth of the human race over the centuries, was being brought under control by vaccination, many people in Florida in the 1890s resisted compulsory vaccination.

In 1896 an epidemic of smallpox, involving 42 cases and eight deaths, threatened Key West because of the length of time the disease had existed in the city before it was discovered by the State Health Officer and because of opposition by the city government to advice and assistance offered by the State Board of Health.

However, an epidemic was averted when people with the disease were isolated (despite near riots); houses where cases occurred



Deadly communicable diseases were a major concern of the State Board of Health during the 1890s and treatment was often uncertain.

were disinfected; and vaccination and revaccination of people were carried out in areas where cases were located. When the first cases were discovered, 12,000 out of the city's population of 18,000 had not been vaccinated. During the epidemic, 8000 of those unvaccinated persons received smallpox vaccine.

In 1898, *Health Notes* stated that compulsory vaccination may have appeared to be an infringement upon the personal rights of the individual but the State Board of Health took the position that when the individual's relations to society were such that he became dangerous to the life and health of others, he should be considered a nuisance and legally treated as such. A law which

compelled vaccination reached beyond the personal question and affected the interests of the community for every unvaccinated person contributed to the material that increased great epidemics. No city with a large unvaccinated population was considered safe from the ravages of smallpox.

During the decade a number of persons were ordered by the courts to be vaccinated and these were reported in **Health Notes**.

Consumption or Tuberculosis

During the 1890s, Florida became a Mecca for many people who suffered from consumption. As the mild climate of the state became more widely heralded, more and more persons suffering from various diseases of the respiratory system came to Florida for the season. In November 1893, the State Board of Health advocated:

notification and registration by authorities of all infectious cases of tuberculosis who had arrived in Florida,

thorough disinfection of all houses in which tuberculosis had occurred and the recording of such action in an open record,

establishment of special hospitals for the curing of tuberculosis, and

government inspection of dairies and slaughterhouses and the extermination of tuberculosis among dairy cattle.

The State Board of Health cautioned the readers of **Health Notes** against the consumptive persons and urged that they not be allowed to mingle with guests at resorts, that separate apartments should be maintained for these people, and that they have closely supervised hygiene and sanitation practices.

The State Board of Health said that invalids with chest and throat diseases made three errors in coming to Florida. They did not come to the state early enough in their illness to receive the full benefit of the climate. They returned North in the early spring before climate conditions had become mild or temperate at home. They persisted in living in overheated and closed rooms rather than in the outdoors which was more beneficial.

Typhoid Fever

Since typhoid fever was traced to impure drinking water and the lack of proper sewage disposal, the prevalence of typhoid fever was no longer considered a misfortune calling for sympathy but an indictment of the "popular intelligence" as behind the times. The months of August, September and October were periods of increasing and extraordinary dangers from typhoid fever. Because the germ was known to be "in the discharge from the bowels, in the urine, in the spleen and probably prevailed in the entire body" of a person having typhoid fever, many issues of **Health Notes** during the decade urged the boiling of all drinking water not known to be above suspicion. It stated in April 1895, that all efforts should be united to obtain pure water supplies and, since the cause and remedy were known, it was the duty of interested persons and governments to procure such help from sanitary engineers and others that would give the desired results—the control of the disease.

Other Communicable Diseases

Malaria, which means "bad air" was reported by **Health Notes** to have been "caused by an organism or parasite, not a bacillus, which gets into the blood and takes all the life out of the little corpuscles." The germ was believed to live and thrive in low marshy regions where there was stagnant water and most prevalent in the autumn. When frost appeared the germ was destroyed. Unlike most diseases, people who had malaria were more apt to have it again.

There was continual vigilance against cholera. In 1892, **Health Notes** warned of a possible epidemic of this disease because thousands of immigrants from the infected areas of Russia were allowed by the Federal Government to enter the United States.

Another issue of **Health Notes** included an article by a physician who described a person dying of rabies. He said that death occurred 48 hours after the first symptoms appeared and

there was "no attempt to harm attendants or attempts to mimic the bark of a dog or the cry of a cat."

Health Notes also stated in April 1896 that there was a prevalent but erroneous idea that **measles** was not dangerous and little effort was made to restrict its spread in some localities. However, statistics show the "magnitude of the dangers resulting from this opinion and neglect" and the benefits resulting from the same preventive measures used against other communicable diseases.

Syphilis Contracted from Cigars?

"Dr. S. W. Gottheil, in a letter to the **NEW YORK MEDICAL JOURNAL**, published March 19, 1892, points out the dangers of syphilis being communicated by cigars. He gives the history of two cases (girls) of secondary syphilis, one of whom was suffering from a chancre on the lip, which she had acquired by drinking out of a cup used by the other, who had numerous mucous patches in the mouth. The girls were cigar finishers, and took the cigars from the machine, biting off the ends and using their saliva for finishing the tips. Neither of them would believe that the disease was contagious and both of them continued to work as before, 'because it took too long to use the knife and brush.'"

FLORIDA HEALTH NOTES, March 1893

Dengue fever was quite prevalent in the peninsular portion of the state for many years. It was said to resemble seasickness in that it caused aching bones and muscles and a rash but was similar in some of its symptoms to yellow fever. The latter was often mistaken for dengue. During one epidemic there were 500 to 600 cases reported in Kissimmee and in 1894, 97 of 115 men at a military barracks in Key West were attacked by the disease.

During the summer of 1894 the Texas State Board of Health closed Galveston Harbor to passengers from Key West because of dengue fever which Texas authorities felt was a quarantinable

disease. Dr. Porter protested the action but the quarantine prevailed for the year.

The Fight for Cleanliness

One of the early editions of **Health Notes** stated that the "sanitarian attacks the mortality rate when he feels it too high and that it may be lowered by his personal efforts." Throughout the 1890s the magazine advocated proper sanitation and noted that "formerly appeals to Deity to ward off the scourge was the manner in which diseases were expected to cease but only when London was thoroughly cleaned did the great plague come to an end."

Municipalities were urged to cut weeds, prevent the dumping of garbage and trash in vacant lots and inspect alleys and backyards frequently. Householders were cautioned against cesspools under kitchen windows; sanitarians were charged with checking privies, making examples of those who persisted in violating health ordinances, carrying out monthly house-to-house inspections to ascertain the number of sick and, if possible, the cause of the illness and admonishing against the use of well water, particularly wells near barnyards and privies.

In August 1898, notice was taken of city ordinances which prohibited the sweeping of streets and sidewalks, except at prescribed times and only after sprinkling sufficiently to allay the dust . . . this would do much "to prevent dissemination of disease germs of tuberculosis and diphtheria." In an earlier issue, **Health Notes** stated that "it is a fact that clean and well-kept streets caused a marked reduction in the death rate of large cities, particularly as regard to malaria and pulmonary ailments."

Outside the cities, sanitation in the 1890s was sadly neglected. In many of the smaller towns, methods for the deposit of refuse and garbage were almost as crude as when the country was first settled. The drainage was bad; the drinking water was in constant danger of pollution; if a case of typhoid fever appeared, an epidemic was very likely to follow. Safe sanitation practices were frequently neglected, such as:



Disease and poor sanitary practices were often prevalent in rural Florida in the 1890s.

wells for drinking water generally located convenient to the house, irrespective of the position of the privy vault, pigsty or stable;

privy vaults ordinarily not made water tight and drainfields haphazardly located; and

pigsties usually located not far from the abode of man and not kept in a clean condition.

Advice was given on how to fight microbes. Water and fresh air were considered the greatest sanitary agents. The germs of many of the worst diseases were conveyed in drinking water and Floridians were urged to use pure water only. **Health Notes** added in July 1895 that water could be "rendered perfectly pure and safe by boiling and filtering . . . it is dangerous to drink water which has stood overnight in a closed room, especially in a room occupied by a person or living animal."

Fresh air could be obtained without money and "nothing which will kill disease germs as quickly as the application of fresh air and the rays of the sun." Floridians were urged to use disinfectants freely and fumigation was said to reach every corner of a room where germs were apt to lurk. The cheapest material for fumigation was sulphur.

School, Child and Maternal Health

Health Notes took notice in several issues of school buildings, playgrounds and classroom hygiene.

Ventilating, heating and lighting in schools and the seating of students were of concern to the State Board of Health. Ventilation depended upon the number of occupants, dimensions of the room, height of ceilings and number of external openings. Since the number of days in winter when artificial heat was needed was small, compared with the days when fires were not required, the

A Step Toward Proper Sanitation

The July 1895 issue of **FLORIDA HEALTH NOTES** stated that a six-man jury in the thriving community of West Palm Beach in Dade County recommended the passage of sanitary ordinances and the placing of boxes and barrels on the streets and highways for the reception of refuse. The State Board of Health commended West Palm Beach for the action and recommended the practice to other cities of Florida.

subject of warming of schoolrooms was "only referred to." Lighting came from windows so these were placed so that the strongest light came from the left side of the students.

The State Board of Health called for school boards of the state to see that all schoolbuildings had spacious grounds to give "children ample opportunity for healthful exercise." These were to be

filled with "simple, gymnastic appliances which will induce precise movements and occurring of attention to details of exercise . . ."

Schools were urged to provide an abundance of pure water. Schoolrooms were to be cleaned, disinfected frequently and well aired during recreation periods and at night.

A scholar complaining of fever was to be sent home immediately and it was recommended that all other children of the home be kept out of school. Personal belongings of the students were to be removed and disinfected or destroyed according to the nature and severity of the disease.

Health Notes stated in July 1894 that "special attention should be directed toward (child) bearing women" but the State Board of Health had no such program as it has today. The agency contemplated a crusade of education for midwives and made an appeal to readers of **Health Notes** for papers and short articles for their education. The indiscriminate practice of midwifery in the state without legal or other restrictions was seen by the State Board of Health as jeopardizing the lives of many helpless women and children.

Vital statistics revealed more deaths under one year than between the ages of one to 25 and disclosed "very defective sanitation and hygiene as applied to those under one year."

The Beginning of Vital Statistics

The State Board of Health continually tried to bring about an accurate and complete registration of vital statistics and urged medical practitioners to report births and deaths as soon as possible.

Many nonwhite births and deaths were not reported and physicians, nurses and midwives were urged to report deaths and births in their community whether or not they attended the event. Those reporting such information to the State Board of Health were asked to answer all questions "but don't fail to report if you can't." They were asked to pay attention to nomenclature, write causes of death plainly, report stillbirths on death cards, and fill out apparently minor details.

In September 1898, **Health Notes** stated that physicians should endeavor to specify the cause of death as definitely and correctly as possible. It noted that it was not unusual to find a physician's certificate naming the cause of death as "paralysis, paraplegia, fits, convulsion, dropsy, etc., which were considered merely secondary or consecutive causes . . . simply symptoms only or results of some organ lesion or pathological disarrangement."

HEALTH NOTES in November 1894 remarked that physicians in one of the more populous counties were loathe to contribute to the successful workings of the State Board of Health. They objected to the blanks used in reporting births because of the number of questions they termed "unnecessary."

Nutrition in the 1890s

Health Notes remarked that Americans were noted for the enormous quantity of food they consumed and "it is a fact that most of our people eat just double as much as they should . . . They could do better and more work on half the food . . . Fully five-sixths of the diseases and sickness in our country is brought on by overeating and drinking."

In 1896, the publication noted a nutritious way to "good health and vigor:"



Florida's subtropical climate and healthful recreational facilities were mentioned often in early issues of **HEALTH NOTES**.

"Let every summer dweller in Florida of bilious temperament provide himself a stock of good lemons and every morning and at least half hour before breakfast, take the juice of half or whole one in a pint of water without sugar . . . do not neglect it for a single morning until you begin to feel the reinvigorating effects of the approaching autumn frost and we will with reasonably prudent living, in other respects, almost guarantee you good health and vigor all summer."

Public Health in Retrospect

This has been a look at public health in the 1890s and some of the ideas are strange to us today. Seventy-five years ago com-

municable diseases were a major threat to the people of Florida and aside from quarantine and fumigation there was little to be done. In the years since that time communicable diseases have ceased to be such a problem—but there are other things, such as air and water pollution, which are considered just as great health hazards.

Today the State Board of Health is still concerned with sewage disposal, plus industrial waste, which the Board did not worry about in the 1890s. It is concerned with adult health and chronic diseases, which were once considered as part of every elderly person's inheritance. Hospitals, nursing homes (which were not even heard of in those days) and Medicare are playing a larger part in the total health picture. Many programs never dreamed of by Dr. Porter and the State Board of Health in the 1890s, such as radiological health, are standard programs in today's public health picture.

But some of the problems faced by Dr. Porter still exist. The population has increased from 391,442 in 1890 to 5,940,000 in 1967. During the first four years of operation, the State Board of Health's receipts were approximately \$114,000. In 1966, the receipts from all sources were over \$41,000,000. But, today, due to the expanding population, financing is still a major problem. Where Dr. Porter had only a small staff, the State Board of Health family numbers several thousand workers. But still there is a shortage of professional people to carry on the programs.

One of the major items that **Health Notes** sought in its first issue is still a factor in the work of the State Board of Health today—that is the cooperation of the people of Florida for better health.

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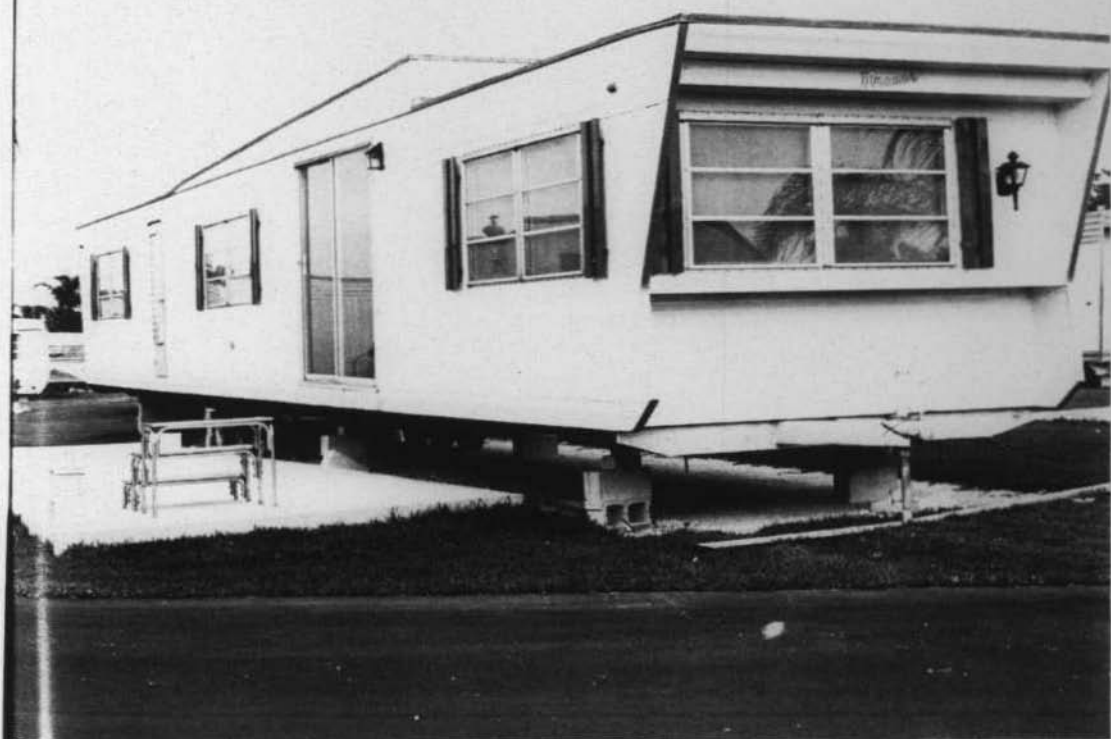
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The double mobile home has the same conveniences and is nearly as large as a permanent house. The 24-foot living room (above) and dining area (right) occupy part of the two connected trailers.



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Mr. and Mrs. Brown, a retired couple, spend the cooler months of the year living in a mobile home located in a well-kept mobile home park in a Florida city. The rest of the year they reside in their home in a northern city.



Mr. and Mrs. Smith, who are semi-retired, reside in a mobile home park in another Florida city. They prefer this type of living because of the low cost maintenance of their residence and the social life of the park.



Mr. and Mrs. Young and their three children are living temporarily in a mobile home park. They are renting their trailer until Mr. Young can find work and then the family will move into a permanent home.

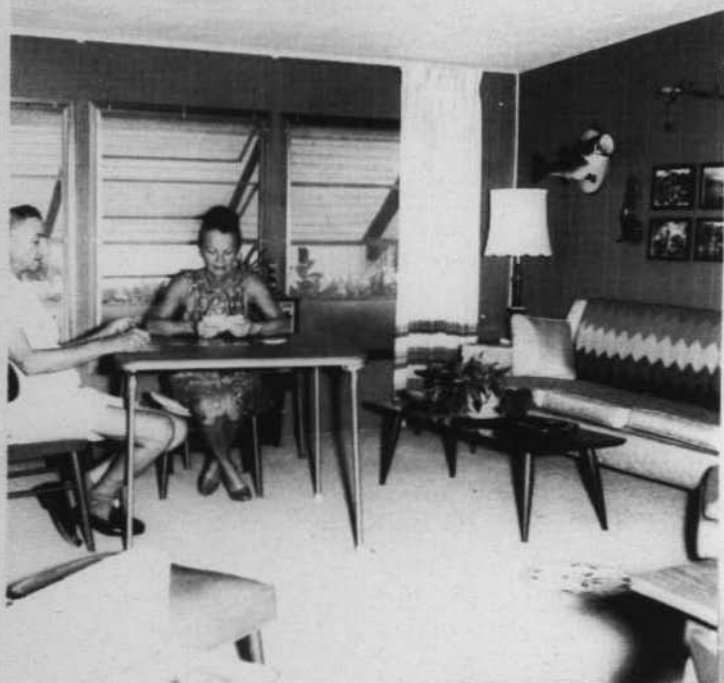


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The dependent trailer does not have its own bathroom and its occupants must use a central bath house, with toilets and showers, which may serve the whole park. A few trailer parks have built small bath houses to serve a block of four trailers in the immediate vicinity. Only 4628 trailer spaces in Florida's parks are for dependent trailers.

The State Board of Health and County Health Departments are interested in trailers as "homes" because of the environmental health of the residents, the tendency to crowd trailers together, the problem of pure water, and sewage and garbage disposal. Because of these health factors, they favor the use of independent trailers connected to central sewerage systems.

In this issue of **Florida Health Notes** we will give you some of the facts about mobile homes, tell you why people like this type of

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The camps were hardly more than vacant lots where trailers were parked for a couple of dollars a month. Trailers were jammed together helter-skelter and only a few camp operators built facilities for laundries, showers and toilets. There was a good reason why all operators did not build such facilities—they were not required to do so.

The State Board of Health and County Health Departments saw the congestion of people in these crowded camps. The 1939 Legislature passed a law which required trailer camps to meet minimum standards of the Florida Sanitary Code and stipulated that the State Board of Health was to issue trailer camp permits. The State



This mobile home is built of a double trailer (right) and a single trailer (beyond the screened private swimming pool).



A unique use of a mobile home is this one on pilings with a carport beneath.

Board of Health and County Health Departments were hard pressed to inspect the camps because of the shortage of personnel.

Since that time the Sanitary Code has been updated. Changes were made such as enlarging the space for trailers from about 900 square feet to the present 2400 square feet (to accommodate the bigger trailers), widening the roads in the trailer parks, removing the requirement for the central bath house in parks which are only for trailers with their own bathrooms, and adding the provision for central sewerage systems.

Today the County Health Departments have the inspection of trailer parks as a regular part of their environmental health programs. In some Health Departments the sanitarian, who is in charge of a district, inspects the parks in his area; other Health Departments have specialists who are responsible for all mobile home parks in the county.

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Why Do People Prefer Mobile Home Living

Hundreds of thousands of Floridians live in trailers located in mobile home parks. These parks are no longer known as "trailer courts" and to the aficionado (devotee) of this way of life "trailer courts" are fighting words.

There is more camaraderie (loyalty and good spirit) in a mobile home park than in the normal community. The people live under similar circumstances and such problems as stray dogs or sanitary problems affect the park "community" as a whole.

The residents of the park frequently share recreational costs. Some parks have elaborate recreational centers with game rooms, kitchens, dining rooms, swimming pools and yacht basins, which give the park a country club atmosphere. Such activities as splash parties, shuffleboard and bridge tournaments, card parties, volunteer work, dancing, potluck suppers, chapel services, etc., are common in most mobile home trailer parks. Some park communities have residents' associations which charge small dues to cover the costs of the social activities.

Facts About Mobile Homes

The first trailers in which people lived were small units about eight feet wide and 20 feet long. Mobile homes today are 12 feet or more in width and up to 70 feet in length. The huge double "jobs," consisting of two trailers side by side, are as elaborate and nearly as large as small houses. When they are set up in a mobile home park, it is difficult to tell them from a house and many of them are not readily movable. Most trailers stay in the park during the whole year but even with the attached screened cabanas and patios they can be moved. Some trailers are put on permanent foundations and enlarged with additional rooms. The large movable trail-



Many of the newer mobile home parks have elaborate recreation buildings which are used for card parties, bazaars, dances, potluck suppers, etc.

ers, themselves, are more like normal, permanent houses with two or three bedrooms, and larger kitchens, dining and living rooms.

There are less maintenance problems with a mobile home. The owner only has to wash his trailer down with a hose occasionally and paint the top of the trailer every two years. There is less lawn

Why Do People Prefer Mobile Home Living

Hundreds of thousands of Floridians live in trailers located in mobile home parks. These parks are no longer known as "trailer courts" and to the aficionado (devotee) of this way of life "trailer courts" are fighting words.

There is more camaraderie (loyalty and good spirit) in a mobile home park than in the normal community. The people live under similar circumstances and such problems as stray dogs or sanitary problems affect the park "community" as a whole.

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Travel Trailers and Campers

More and more Florida and non-Florida families are taking vacations in the state with travel trailers and campers just large enough for sleeping and/or cooking. People who travel in these need showers and toilet facilities but few mobile home parks are equipped to provide these services. Some parks are making space and facilities available for travel trailers; however, the demand is seasonal and during the cooler months these parks are crowded.

Twenty-four state parks in Florida provide a limited number of spaces for tent and trailer camping. On weekends and holidays these facilities are jammed beyond the planned number of campers. Because the parks operate on a first-come-first-served basis, many people are turned away or allowed to camp along the roads of the park.



to care for and frequently the mobile home park does this for the residents.

The cost of a mobile home ranges upward from \$3500; some with screened rooms and private swimming pools may cost as much as \$25,000—or more. Furniture may or may not come with the trailers from the mobile home factory. These factories generally do not manufacture furniture. In modern mobile home parks, the owners may set up models similar to those in a housing subdivision and sell from these models. Some park operators, as a sideline business, decorate the trailers to suit the tastes of the buyer. Other mobile home parks are connected to trailer sales lots and the trailers are merely moved into the parks. Sometimes the trailers are hauled a short distance to another mobile home park the buyer prefers or the trailers may be moved many hundreds of miles. The cost of moving a trailer may run as high as \$300 or more—depending upon the distance and such attachments as cabanas, awnings and carports which must be removed and then re-attached.

The Mobile Home Park

The Florida Sanitary Code specifies that the parks should be located on a well-drained site which will dry quickly following a rain. Many of the older parks are located in less desirable spots, near industrial plants, railroads, airports or busy highways. Some of the better parks are located in quiet areas off the main highways, and yet they maintain a full complement of trailers through

(Opposite page, top) A campsite in a state park is equipped with garbage cans and a centrally-located building which houses toilets and showers (in background). Some mobile home parks (bottom) are equipped to cater to travel trailers which have become popular with the touring American public.



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A Pinellas County mobile home park is packed with several hundred trailers. Many of these are permanently situated but others can be moved at the discretion of the owners.

endorsements given by people who have lived in the parks or advertisements in trailer magazines.

The area of the mobile home park should be big enough to accommodate the permitted number of trailer spaces, necessary roads and parking spaces for motor vehicles. The space for independent trailers must contain a minimum of 2400 square feet and be at least 40 feet wide. Despite this requirement, some parks have trouble accommodating the larger 70-foot models. Space for dependent

trailers must have at least 1200 square feet and be a minimum of 30 feet wide. The better parks allow more than the minimum space, and they have an appearance of spaciousness which older, less well-kept parks do not have.

The Sanitary Code requires that there be a minimum of 10 feet between trailers or any enclosed room and between trailers and park buildings, except a dependent trailer served by its own toilet or utility building. A five-foot space is required between any trailer, its cabana and the exterior boundary of the park; all trailers and additions should be placed so as not to obstruct public walkways and streets.

Mobile home parks should be designed to give all trailer spaces access to roads. If off-street parking is provided in new parks, the streets should have a minimum width of 25 feet; otherwise, the streets should be at least 30 feet wide. Perimeter roads, which have trailers on one side, should be 20 feet wide.

Many county zoning requirements exceed the requirements of the Florida Sanitary Code and therefore would be effective when more stringent.

Rental space in mobile home parks usually ranges from \$16 to \$65 a month. Waterfront space in luxurious parks in some resort cities may run much higher. The lower priced parks, which are usually older, have less to offer their residents. They may lack paved streets, have inadequate parking space for large trailers, have no concrete slabs for entrance ways or cabanas and provide no recreational facilities. The better parks have all of these facilities plus connected propane gas and electricity which are metered separately to each trailer.



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Many mobile home parks which cater to retired people do not allow children or pets. Some of the better parks may set aside part of the area for families with children. One such park in a Florida city provides a family section separated from the rest of the park by the recreational center, swimming pool and yacht basin.

The County Health Department's Responsibility

Some of the major health problems with mobile trailer parks are trash and litter around trailers, which means poor housekeeping on the part of the residents and park manager, and improper sewage disposal or connections to the sewerage system. The older parks are the ones which give the most problems because of too little space and poor facilities and drainage. Plot plans for new parks are designed in cooperation with the County Health Department's environmental health section and must also be approved by either the city or county zoning departments if applicable. Water



Trailers of various sizes are parked helter-skelter in an old trailer park. These spaces do not have concrete entranceways, cabanas or the luxuries of newer mobile home parks.



This up-to-date mobile home park furnishes its residents with this laundry center which includes automatic washers and dryers.

and sewage aspects of the plans are also approved by the county sanitary engineer, if the County Health Department has one, or the State Board of Health's Bureau of Sanitary Engineering.

Prior to construction of a new park, the owner or operator must submit to the County Health Department plans which show the layout of the area and dimensions of the tract of land; the number, location and size of trailer spaces; the location and width of streets and walkways; the floor plans for permanent buildings, such as recreational buildings, to be built, including plumbing fixtures; and the plans for water supply and sewage disposal.

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A sanitarian checks the sewage pipe connection to a modern mobile home. (Opposite page). In another older trailer park, he checks a toilet in a central bath house which also includes two lavatories.

These plans are approved by the County Health Department. The local sanitarian checks on the construction as it progresses, and when the park is completed, he assists the owner to obtain the needed permit.

Periodically the sanitarian checks to see if there have been any changes in the park, if there are any violations of the Florida Sanitary Code, or if there are more trailers permitted than the number for which the park is allowed. Prior to expanding or adding trailer spaces, the owner must apply for another permit. Each park must have a supervised office where both the State Board of Health and the mobile home park regulations are posted, complaints answered and registrations of residents maintained. The registrations should include:

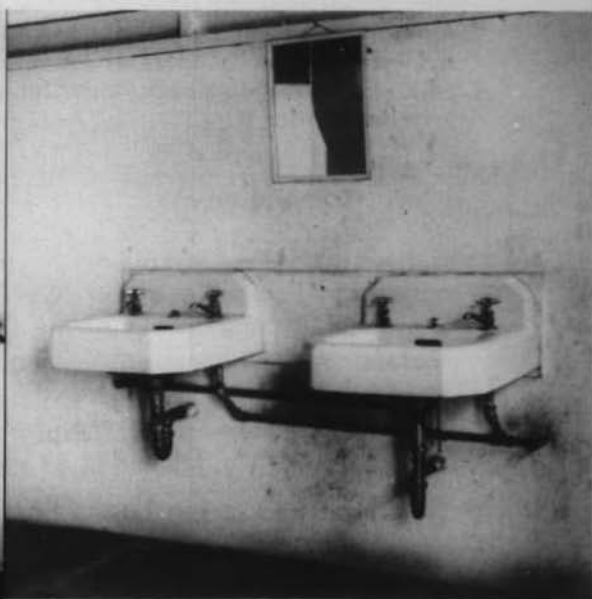
names and addresses of all trailer occupants;

make, model and license number of each motor vehicle and trailer;

state, territory or county issuing the trailer license; and

date of arrival and departure of each trailer.

The registration is for the benefit of the park residents. For example, the mobile home park manager would be able to know where to contact the owners of a trailer should something happen, such as hurricane damage, while the owners are away. Some mobile homes are parked all year in the park, even while the owners spend part of the year in other parts of the United States or abroad; some





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A new mobile home park (left) has an electric meter for each trailer space. A sanitarian (above) looks at the wiring to a master meter in an old trailer park which submeters each trailer for an equal amount of electricity, whether or not it uses it.

trailers are stored on lots set aside for this purpose; and others are rented by the park operator to offset the cost of the parking space. Some mobile home parks own a few trailers which are available as rentals.

What the Sanitarian Looks For

Water supply—Each mobile home should have access to adequate, safe and potable water with a service connection to each trailer. If the park has its own private water supply, the sanitarian takes water samples periodically for testing by the state laborator-

ies. If public water is available, the park must be connected to this system.

Sewage disposal—If a public sewerage system is available, the mobile home park must be connected to it; should the park use septic tanks, there must be no overflow during the rainy season. The park manager should see that each trailer's connection to the park's sewerage system is tight and of an easily removable, acid resistant, semi-rigid or flexible material. Frequently the sanitarian checks the trailers for loose or improper connections. All plumbing must comply with the Florida Sanitary Code and local ordinances. Trailers which do not have plumbing complying with the Sanitary Code should not be connected by the manager. When a trailer is removed, the sewer outlet must be tightly capped.

Toilet facilities—A park catering to dependent trailers or trailers making a one-night stop must have toilet facilities available. They must also be available in the park's recreational or public gathering buildings.

Garbage and refuse disposal—A park manager needs to work out a system of collecting, storing, and disposing of refuse and garbage so that there are no health hazards, rodent harborage, insect breeding or accidents. Garbage should be stored in tightly covered containers. Some parks have racks for holding 20-gallon cans or Dempster Dumpsters located throughout the park; others have garbage cans located at each trailer. Refuse should not be allowed to accumulate but be picked up at least twice a week; burning of refuse in the park should not be allowed.

Managers sometimes have difficulty with residents who store lumber and other material under their trailers. The better parks counteract this by having the trailers skirted with fancy concrete blocks or other decorative material which allows the circulation of air underneath the trailers but discourages the collection of trash.

Shrubs or flowers are sometimes used but they often die or are neglected.

Insect and rodent control—The manager should see that no standing water be allowed to collect where insects can breed and the park should be kept free of refuse and debris which harbor rodents. If rodents are known to infest the park, the manager should take steps to have them exterminated. Weeds should be controlled and good housekeeping maintained.

Electricity—The parks must comply with local electrical codes and ordinances. Some trailer parks have a master electric meter and submeter electricity to each lot. However, utility companies prefer to bill each trailer separately and directly. Sanitarians sometimes have to check electrical outlets which supply at least 110 volts to each trailer. If the installations are not safe, he asks the manager to correct the situation.



Some mobile home parks have garbage cans at each trailer. This one has a unique way of keeping such cans well organized behind hedges.

The trailer owner who practices poor housekeeping is a problem to both the park manager and the County Health Department. Such piles of belongings harbor disease-carrying rodents and are fire hazards.



Laundries—Some parks provide automatic washers and dryers, located in a central building, for the use of the park's residents. Where public laundry facilities are not available in the neighborhood, the mobile home trailer park usually provides such services with at least a two-compartment stationary laundry tub with hot and cold running water.

Pets—Most mobile home parks do not allow pets; where they do the pets are required to be kept on a leash and not allowed to run at large. All pets which live in parks are required to have up-to-date rabies immunizations and their owners must have current rabies certificates in their possession.

The Future of Mobile Home Living in Florida

The State Board of Health and County Health Departments view mobile home parks as "housing situations" and therefore are

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The State Board of Health and County Health Departments view mobile home parks as "housing situations" and therefore are

interested in the environmental health and safety of the residents. The primary purposes are to see that people have safe water and proper sewage disposal; the space for trailers, width of roads and control of pets are for safety.

These health regulations are important to modern mobile home living which has a big future in Florida. Low maintenance and the great number of conveniences make this type of living wonderful for retired people. In addition, it offers a congenial, informal way of life. People who are devoted to mobile home living are working with the County Health Departments and the State Board of Health to upgrade and maintain a high standard of mobile home park communities.

How the Number of Trailer Parks Has Grown

Mobile home living has become an important way of life in Florida. In 1948, the State Board of Health issued permits to 225 trailer camps. In 1956, the number of trailer parks had grown to 686 with spaces for 12,900 independent and 3486 dependent trailers. As mentioned elsewhere in this HEALTH NOTES, the state now has 2523 mobile home parks with space for over 105,700 independent trailers and 4628 dependent trailers. Because of the mild climate, the beauty of the parks and the informal way of life, the trend toward mobile home living will continue.

FLORIDA HEALTH NOTES



VOLUME 59 — NO. 9

SOLID WASTES

SEPTEMBER 1967

— the third Pollution

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— the third Pollution



The proper way for the housewife to dispose of garbage is to drain it, wrap it in newspaper (left) and place it in a water-tight container (below).

(Cover photo) The proper disposal of solid wastes is a problem for many communities. The picking up and carrying of garbage to a disposal site is the most expensive part of the operation.



SOLID WASTES--

—the third Pollution

The average Floridian places his garbage and rubbish in a container and takes the can to the curb or leaves it in the alley where it is emptied. He may allow the can to fill up and then take it out and empty it at a local dump, or he may empty it along the highway. Regardless of what he does, he may not give a second thought as to what happens next to his garbage and rubbish.

We hope you are not the average Floridian. But still, do you know what happens to your garbage? Do you know what kind of rubbish disposal service your community has? Garbage and rubbish are solid wastes and solid waste is a form of pollution which ranks a close third to air and water pollution.

This waste is the result of a high standard of living and advanced technology; it is the consequence of rising levels of national production and consumption—coupled with a vast urban population which has no means of disposing of its solid wastes on a personal basis. Because the city dweller does not have any way of getting rid of his solid waste, it therefore becomes the responsibility of his community.

The disposal of solid waste creates a problem that overwhelms the waste handling and disposal resources and facilities of nearly every community in the state. Unless steps are taken to properly dispose of our garbage and rubbish, we will find ourselves reaching for the planets and stars while standing knee-deep in trash.

A common attitude of many communities is the "dirt under the rug" approach. As long as the refuse does not pile too deep along the curbs and in the alleys of our cities, or if it is merely taken to the city dump where the refuse only annoys the nearby



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residents, many communities try to ignore the problem and hope it will go away. Florida has a number of city and county dumps billowing clouds of smoke—air pollution—a few antiquated and overburdened incinerators, acres of junked automobiles and a great deal of industrial waste contributing to the blight of the community.

The burning dumps and improperly operated incinerators contribute to air pollution and the dumps add to the possible pollution of groundwater or surface streams. All of these increase the hazards to health, contribute to urban and suburban blight, affront our sense of smell, and offend our concept of beauty.

Solid waste disposal is a civic problem when a community cannot or will not take the necessary steps to properly dispose of its garbage and waste; the individual who dumps junk in illegal places and tosses beer cans and sacks of garbage along the highway and streets is a social menace.

Some progressive counties and cities in Florida are taking steps to eradicate the unsightly and filthy dumps by erecting modern incinerators and operating sanitary landfills properly.

This issue of **Florida Health Notes** will tell you about the importance of the solid waste problem, the types of solid wastes, the methods of collection, some of the various means of disposal, the salvaging of wastes, and what you can do to help combat this problem.

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A public health worker surveys a field littered with trash discarded by a thoughtless public.

Kinds of Solid Wastes

Solid waste is defined as all of the community's wastes, including those semi-liquid or wet wastes whose moisture content is not enough to make the material free flowing.

These wastes are commonly classified as:

Garbage—putrescible wastes (that which has a tendency to decay) from the preparing cooking and serving of foods; from produce markets, and from the processing, canning and quick-freezing industries.

Rubbish—nonputrescible wastes of a combustible and/or non-combustible nature, including paper, wood, cloth products, rubber, leather, garden wastes, metals, metallic and plastic products, masonry, ceramics and glass.

Ashes—the residue from on-site incinerators or refuse material, including cinders and fly ash from burning solid fuels—wood, coal and coke.

Offal—waste animal matter from butcher, slaughter and packing houses.

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FLORIDA HEALTH NOTES

Published monthly by the Florida State Board of Health, Wilson T. Sowder, M.D., M.P.H., State Health Officer, Publication office, Box 210, Jacksonville, Florida 32201. Second class postage paid at Jacksonville, Florida. This publication is for individuals and institutions with an interest in the state's health programs. Permission is given to quote any story providing credit is given to the Florida State Board of Health. Editor: Robert A. Schoonover, M.A., Division of Health Education.



A public health worker surveys a field littered with trash discarded by a thoughtless public.

Kinds of Solid Wastes

Solid waste is defined as all of the community's wastes, including those semi-liquid or wet wastes whose moisture content is not enough to make the material free flowing.

These wastes are commonly classified as:

Garbage—putrescible wastes (that which has a tendency to decay) from the preparing cooking and serving of foods; from produce markets, and from the processing, canning and quick-freezing industries.

Rubbish—nonputrescible wastes of a combustible and/or non-combustible nature, including paper, wood, cloth products, rubber, leather, garden wastes, metals, metallic and plastic products, masonry, ceramics and glass.

Ashes—the residue from on-site incinerators or refuse material, including cinders and fly ash from burning solid fuels—wood, coal and coke.

Offal—waste animal matter from butcher, slaughter and packing houses.

Manure—body wastes from animals or fowls, including cleanings from barns, stables, corrals, pens or chicken coops.

Special wastes—include street refuse; demolition and construction debris; dead animals; solid wastes from sewage treatment plants; pathological and anatomical wastes from hospitals, clinics and medical centers; industrial wastes and bulky wastes, including automobiles, stoves, refrigerators, furniture and large trees.

Miscellaneous wastes—include small Christmas trees, rubber tires, various plastic materials and cemetery floral pieces.

Solid wastes may also be classified according to source:

Domestic refuse from households and apartment houses;

Municipal refuse from street litter, playgrounds, zoos, schools and solid wastes from sewerage systems;

Commercial refuse from businesses which operate for a profit, including office buildings, markets and restaurants; and

Despite a sign telling where to take solid wastes, people continue to leave their trash at this closed dump.



Industrial wastes from factories, processing plants, repair and cleaning establishments, refineries and rendering plants.

The current production of solid wastes in Florida amounts to about 4.5 pounds per person each day or about 13,500 tons daily for the entire population. Through the increased growth and the use of more disposable containers, it is estimated the total daily output will be twice this amount by 1980.

Public Health Aspects

Why are the State Board of Health and County Health Departments concerned about the disposal of solid wastes?

Flies are quickly attracted to garbage, offal and manure and a cubic foot of suitable breeding material may produce 70,000 fly larvae. Flies infest garbage in open cans that are not picked up but once a week. The larvae are usually concealed in the lower parts of the can so that the householder is unaware of their

Solid waste disposal is not only a problem on earth, but it is much more of a problem in space. During the Gemini-5 astronauts' eight-day mission, the stowage of their solid waste was a principal problem.

presence. These larvae are carried away when the garbage is collected. Where a can of garbage remains a week or longer, flies can emerge to plague a community. It has been shown experimentally that they are capable of carrying bacteria of such diseases as typhoid fever, cholera, summer diarrhea, dysentery, tuberculosis and anthrax, as well as the eggs of intestinal worms on their feet.

Solid waste disposal is important in rodent and mosquito control and therefore much of the work is carried on under the State Board of Health's arthropod control program. Garbage serves as a chief food source for rats and mice; piles of trash, old automobiles and other cast-off materials serve as homes for rodents. These pests can transmit plague, rabies, murine typhus fever and other diseases. Open cans and bottles, tires and other trash catch and hold water in which domestic mosquitoes breed and these pests carry yellow fever, dengue, mosquito-borne encephalitis and filariasis.

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Where backyard burning takes the place of the proper solid waste collection and disposal, there is danger of fire and home accidents. Papers, rags and trash collected in attics and storage rooms can also lead to fires. Discarded items that are not stored properly or are not promptly disposed of are particularly attractive to children. Unsanitary and unsafe conditions in yards and home refuse storage areas have resulted in thousands of minor and severe accidents.

A 13-year-old boy, while playing in an alley with his friends, found several milk bottles with "some fluid" in them. Another boy threw a lighted match into one of the bottles and the resulting explosion caused third-degree burns of the boy's face and a long period of hospitalization.

In addition to disease-carrying vectors and accidents, improper storage, handling and disposal of solid wastes lead to another health problem—air pollution. Large quantities of smoke and odors are produced where burning is used to reduce the volume of solid wastes in open dumps, improperly designed and operated municipal incinerators, backyard trash burners and on-site incinerators.

Serious water pollution can materialize from improper solid waste disposal. Where refuse is deposited on land, rainwater can filter through the matter and into the groundwater. Drainage from improperly stored barnyard wastes may also leach through into the water table.

The danger of trichinosis from pork has been reduced through a Florida statute which requires that garbage be cooked before being fed to pigs. Prior to the starting of such a feeding operation, the farmer must obtain a permit from the State Department of Agriculture with the approval of the County Health Department.

A Society of Discarded Abundance

The modern American civilization may go down in history as one known for its piles of disposable bottles, cans, packages and syringes; its acres of discarded and outdated automobiles; and its mountains of rubble from demolition and construction. Do you

Piles of discarded automobiles serve as mansions for disease-carrying rodents.



realize how much waste paper, boxes and plastic bottles you discard?

The packaging industry has made a tremendous contribution to the safe and healthful distribution of a wide variety of foods, washing products and household items. Disposable bottles and cans for soft drinks, plastic containers for soaps and bleaches, pressurized cans for shaving cream and hair sprays, and plastic bags and wire hangers for clothing have made life easier for the consumer and provided more profit for the manufacturer. Packaging officials report in the near future that some 60 per cent of all soft drinks will be in nonreturnable bottles. Then our streets will be more littered than at present, dumps will be clogged, and incinerators full of bottles or melted glass.

While paper and cardboard containers will burn, plastic bottles that go through the disposal system do not break down (or decay) and therefore end up in the sanitary landfill or dump unchanged. Tin cans will oxidize (decay) in time; disposable aluminum cans will develop an aluminum oxide coating but this is as far as the deterioration process goes. The packaging industry has given no consideration to the solid waste disposal problem. As long as it can make a profit and provide conveniences for the consumer, it can be expected to turn out an abundance of discardable material.

Studies need to be carried out to consider and develop alternate solutions to the problem. Bottle shape might be changed so that they can be more easily cleaned; tumbler-shaped containers with spill-proof polyethylene tops for milk, beer and other beverages might be easier to clean and reuse. More containers which are made to be returned for a deposit refund could reduce the number of cans and bottles discarded on our streets. Double and triple wrappings of packages might be eliminated through the use of newly developed packaging material.

Collecting Solid Wastes

The population growth and the concentration of people in metropolitan areas are the main reasons that refuse disposal has become an acute problem. Rapidly expanding communities find that the cost of collecting and hauling solid waste to distant disposal sites is becoming increasingly expensive. In fact the cost of collecting is three or four times as much as the actual disposal.

Despite the ugly curbside garbage cans, the unsightly collection trucks and crews, the pick-up noises (especially at night or in the early morning hours), house-to-house collection services need to continue. Although the home and commercial garbage grinders have proven successful in some respects, the other kinds of solid wastes produced by the household still need to be collected. Commercial and industrial collections, especially in business districts,



Workers from a city waste department clean up a pile of rubbish placed at the curb by a homeowner.



A front-end loader is used by a city waste department to pick up heavy trash, such as abandoned refrigerators and stoves.

are complicated by traffic, limited storage space, noise, odor and health and safety hazards.

There are two collection systems in use in Florida:

The **municipally operated service** conducted by an appropriate branch of the local government for which city residents are taxed; and

the **franchised service**, carried on by a private company, which makes periodical pick-ups of garbage and rubbish and bills the customers for the service.

Some residents of the franchised areas refuse to accept and pay for the services of the private company and dispose of their solid waste the best way they can—sometimes dumping it in illegal dumps or along the highway. Because of the danger of disease, the State Board of Health, County Health Departments and mosquito control districts discourage this practice.

Door-to-door collections are made in a wide variety of trucks. The open-bed vehicle, which is used far too often, gives off odors, collects insects, scatters papers, and does not hold much refuse. The progressive communities and franchised operators are turning to closed compaction trucks. While these vehicles have distinct advantages over the open-bed trucks, they are noisier, heavier and costlier to purchase, maintain and operate. Besides the usual gar-

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A closed compaction truck, similar to the one on the cover of this issue of Florida Health Notes, delivers its load of garbage to a sanitary landfill . . .

bage pick-up, the collectors may pick up and dispose of yard litter, newspapers, old furniture and worn out appliances which emanate from a household. The collectors may make special trips once a week to collect these items, or they may refuse to handle them entirely.

When the route vehicle has stopped at each house, commercial establishment or industrial plant to take on waste material and completed its route or filled the truck, it proceeds to a place where it deposits the contents. If it is a short distance to a dump, sanitary landfill or incinerator, there is no problem. However, in metropolitan areas, the distance to the disposal place of solid wastes may be great and therefore this adds to the overall cost. In some Florida communities, waste material is taken by the route trucks to a central location where it is placed in bins. The refuse is then transferred to bulk haulers for the long trip to a distant sanitary landfill or incinerator.

Each time the material is rehandled, the cost of the disposal service goes up. The hauling of solid wastes in these bulk haulers is further complicated by weight limits on highways and regulations of the motor vehicle code which stipulates the gross tonnage of large trucks.

The Offending Dumps

According to the Florida Sanitary Code, the disposal of garbage, offal, dead animals and manure or rubbish or any mixture thereof, can only be disposed of by incineration, burial, sanitary landfill or other method approved by the State Board of Health. The material cannot be disposed of by being placed in any natural or artificial body of water or on the watershed of any surface public water supply. It cannot be placed within a half-mile of any house or business where it may become a sanitary nuisance or menace to health, or dumped upon a Florida highway or alley or within a half-mile of such roads, except where it has been treated in a manner approved by the State Board of Health.

Nevertheless, one most common method of disposing of solid waste is to dump it some place, either a spot along the road, which is illegal, or at a place designated as a community dump. This method is unsatisfactory because open dumps breed disease through infestation by rodents and insects, are unsightly, give off odors and contribute to air and water pollution. Some of these dumps are disposal places for sludge from septic tanks and this makes the situation even worse.

... where the garbage is leveled off and packed down by a bulldozer. In this particular city-owned landfill, dirt is hauled to cover the waste.





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The waste material in many open dumps is burned to reduce the volume. This practice, according to the Florida Sanitary Code, is illegal. Some dump operators burn over the solid waste material before burying it in a sanitary landfill; while this is an economical step, it is not acceptable. Such burnings may contribute to air pollution when carried out near populated areas. Some operators don't cover the burned dumps.

Many of the counties and cities have programs of solid waste pick-up and disposal. Some restrict the pick-up only to garbage and do not pick up yard trash. But those counties and communities which do not have any such system leave it up to their residents to dispose of their solid wastes the best way they can. The only way is to drop it somewhere, burn it or bury it. The latter method is sanctioned by the State Board of Health, but it must be done in an approved manner (as stated in the Florida Sanitary Code).

Sanitary Landfills

The best and most economical way for a small community to properly dispose of its solid waste material is the sanitary landfill, but in Florida much of the land is too wet for such operations. There are approximately 160 sanitary landfills in 40 Florida counties under the state arthropod control program. In addition, there



are many other sanitary landfill operations throughout Florida that do not participate in the state program. However, not all of the landfills are properly operated. The county, mosquito control district or private firm which is to manage a sanitary landfill must submit its plans to the County Health Department. These plans must include a map showing the location and work plan of the landfill. The State Board of Health reviews the plans, makes such field investigations as it deems necessary, and either approves or disapproves the proposed operation.

According to the Florida Sanitary Code, separate disposal areas are necessary for rubbish, offal and dead animals and sewage sludge from septic tanks. These areas are to be covered with six inches of dirt or sand each day. No trench or pit in which wastes are to be placed should have water in it during the filling operation but it is most difficult to operate a landfill in an area where there is a high water table. The Code further specifies that the site of the landfill should have an all-weather road and be accessible by trucks and cars. Garbage must be compacted in layers not more than six

In a sanitary landfill, a bulldozer pushes trash into a ditch into which water has seeped (left). A high water table is one of the problems faced by such operations in Florida. Another dump (right) has been set on fire by thoughtless people. This is a violation of the Florida Sanitary Code.



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feet in depth; it must be sufficiently covered with dirt to form a closed cell at the end of each day's operation; and when each cell is closed out, it must be covered with at least two feet of sand, loam or other suitable material. Before the operation can be considered completed, the slopes must be seeded with grass; maintenance continued until the fill has stabilized. This is done to prevent cracks in the fill, depressions and erosion of the surface and side slopes.

The three methods of landfills are:

- * the trench method in which each day's refuse is covered by dirt excavated from an adjoining trench;

- * the ramp or progressive method, in which the covering material is obtained from an area just ahead of the face of the dump; and

- * the area method, in which uneven or low areas are filled with refuse and earth brought in from another location to cover the refuse. This latter method may be carried out when the landfill does not interfere with natural drainage.

Because of the high water tables and because land suitable for sanitary landfills is expensive, governmental units have difficulty in obtaining good land for this type of solid waste disposal. Many times a community will take an option on a tract of land for a sani-

Solid Waste Sanitary Districts

Solid waste sanitary districts may be a future means of combating the solid waste disposal problem. When the cost of such waste disposal is prohibitive for a small county or municipality, two or more neighboring counties or cities may band together to form a sanitary district for this purpose. In such a district a centrally-located incinerator would replace unsatisfactory landfills or dumps; the cost of construction and operation would be divided among the participating government units.

tary landfill and people living in the area will make such strong objections against the proposal that the option is dropped. This has happened time and time again in many Florida cities. Borrow pits and excavations sometimes contain water. These cannot be used for depositing garbage but construction materials, trees, palm fronds and other such materials are sometimes placed in them.

Disposal by Incineration

Where suitable land is available at a reasonable price, the properly operated sanitary landfill is more economical on a short-time basis than the incinerator. Currently there are 12 county or municipally-owned incinerators in Florida although not all of them are in operation.

As communities expand and population density increases, central incineration for a metropolitan area can become a prime alternate to the sanitary landfill, despite the high cost of construction and operation. An incinerator requires a small amount of land; it can be located near the refuse collection area, saving the cost of hauling the refuse a great distance. The properly operated incinerator can achieve a major reduction in volume of refuse, reducing the organic portion to ashes which may be hauled to a sanitary landfill. Incinerators are flexible; operations can be adjusted to seasonal or daily variations.

There are disadvantages to incinerators. The cost of construction is high and a suitable staff to operate the incinerator is difficult to obtain. A small number of communities in other states have built incinerators that used all of their financial resources. They then could not enlarge the plants to handle the increased load of refuse resulting from expanding populations and at the same time they had no capital to finance supplemental disposal facilities.

Air pollution restrictions may require installation and maintenance of expensive control devices. Wet scrubbers, used to reduce the fly ash emitted from the stacks of an incinerator, result in steam. Many people, when they see such a plume, throw up their

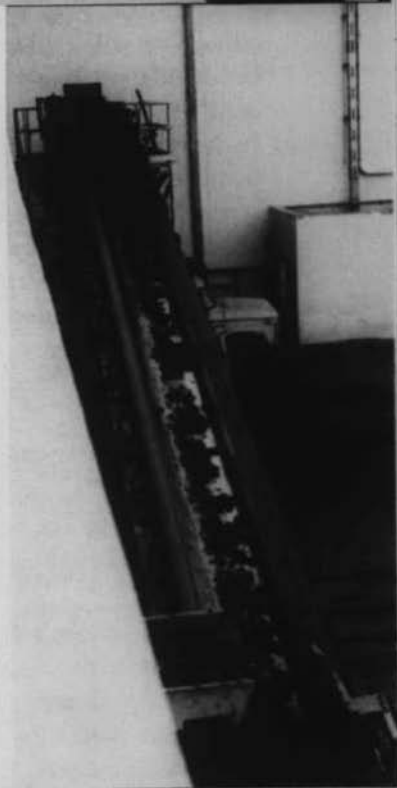


hands and shout, "Pollution!" To offset this situation, electrostatic precipitators have been installed to remove the fly ash and these have proved satisfactory but the initial cost is greater.

In most of the heavily populated Florida counties, where all of the incinerators in the state are located, land suitable for sanitary landfills is high-priced real estate, and therefore incineration is the answer to solid waste disposal. Most of these plants have been built and operated successfully without air pollution or other problems. The State Board of Health recognizes that a municipal incinerator is a major factor in the future of solid waste disposal.

Composting

Composting is a method of taking garbage and refuse, treating them and turning out a finished product which can be applied to the ground as a soil restorer. Composting is practiced extensively in Europe but it is being discontinued due to the shortage of putrescible material. The method has not been widely accepted in the United States because there is no way to utilize the final product. Chemical fertilizers can give far better results for the price but compost may be used as a ground conditioner for forests and pastures. At the present time there are only two small composting plants in Florida.



Incineration is one of the best methods of solid waste disposal. (Above, left to right) The 450-ton, municipally-owned incinerator at Fort Lauderdale is in full operation; a compaction truck empties its load of garbage into the pit at a Broward County incinerator; an electric crane picks up a pile of garbage from the pit and empties it into the feeder which carries the waste into the combustion chamber; a staff member checks the control panel. Ashes, tin cans and other wastes which would not burn emerge from the furnace on an endless belt (right) and are emptied into a truck. They are then hauled to a landfill near the incinerator (below).





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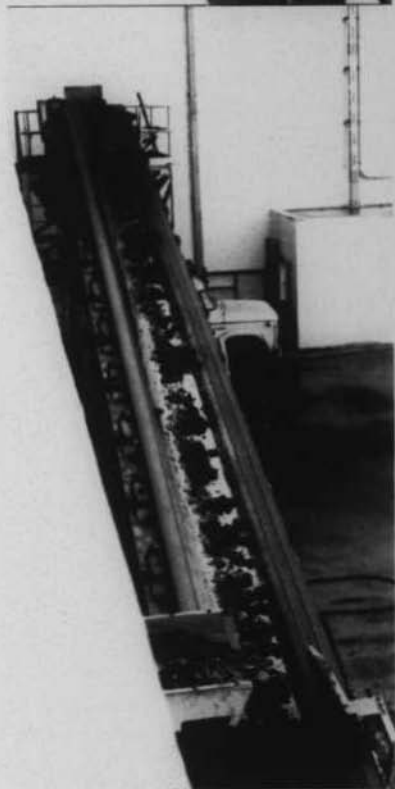
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The refuse is brought to the composting plant where the solid waste is scanned and such materials as glass, coal, iron, nylon, plastic, leather and rubber are removed. What remains is shredded by one of several methods, including crushing or rasping. The refuse is then allowed to decompose, a process in which disease-carrying bacteria are reduced or killed by other forms of bacteria and elevations in temperature. The moist organic matter in the composting plant is disintegrated by the bacteria which needs nitrogen for cell production. Fermentation is necessary because if fresh refuse were put into the soil, the bacteria would deplete the soil of nitrogen, an element which plant life needs to thrive.

Compost may be used in agriculture to restore poor and drought-sensitive soils. These are primarily sandy and sandy loam soils, the kinds we have in Florida. Not all plants react the same to compost but potatoes and turnips are examples of compost-loving crops. In horticulture, compost is used on heavy soils. Good results have been obtained with all kinds of vegetables, flower bulbs, fruit trees, vineyards and citrus cultivation. Compost increases the water absorbing capacity of the soil and can be used for playgrounds, parks and, especially, athletic fields. However, the product cannot be trusted because one never knows what's in it and it is too expensive to apply.

Salvaging Solid Wastes

One thing that could cut down on the amount of disposed solid waste is the salvaging of some kinds of material.

The problem of solid waste disposal could be simplified to some extent or reduced if salvaging and reclamation steps were taken by municipal and private means. Salvage operations, which were profitable a number of years ago, have largely been abandoned for economic reasons, interference with normal disposal operations, or because of nuisances the operations created.

New procedures for salvaging wastes are needed to replace antiquated, costly and undesirable methods of scavenging, sorting and hand picking. Because disposal costs are often financed from



Such solid wastes as wrecked and useless automobiles are used as fill in a low marshy area.

general funds or lumped with other operations, many large producers of wastes are not aware of the true cost of refuse disposal. There is little or no incentive to reduce the quantity of wastes or find new uses for waste material.

Examples of wastes and possible uses that could be explored are:

- * organic wastes made into animal feed, antibiotics, enzymes, vitamins, or other pharmaceuticals and plastics;

- * discarded tires and greases and oils from gasoline stations, machine shops and similar places burned as fuel in special furnaces;

- * paper wastes used for wallboard, acoustical and insulating materials, spray mulches, fertilizer and insecticide carriers; and

- * fly ash as additive to concrete or insulating materials, soil stabilizer or carrier for fertilizers and insecticides.

Some wastes, such as abandoned automobiles, barnyard wastes and citrus pulp are already being salvaged for use in steel production, agriculture land restorer and animal feed.

The refuse is brought to the composting plant where the solid waste is scanned and such materials as glass, coal, iron, nylon, plastic, leather and rubber are removed. What remains is shredded by one of several methods, including crushing or rasping. The refuse is then allowed to decompose, a process in which disease-carrying bacteria are reduced or killed by other forms of bacteria and elevations in temperature. The moist organic matter in the composting plant is disintegrated by the bacteria which needs nitrogen for cell production. Fermentation is necessary because if fresh refuse were put into the soil, the bacteria would deplete the soil of nitrogen, an element which plant life needs to thrive.

Compost may be used in agriculture to restore poor and drought-sensitive soils. These are primarily sandy and sandy loam soils, the kinds we have in Florida. Not all plants react the same to compost but potatoes and turnips are examples of compost-loving crops. In horticulture, compost is used on heavy soils. Good results have been obtained with all kinds of vegetables, flower bulbs, fruit trees, vineyards and citrus cultivation. Compost increases the water absorbing capacity of the soil and can be used for playgrounds, parks and, especially, athletic fields. However, the product cannot be trusted because one never knows what's in it and it is too expensive to apply.

Salvaging Solid Wastes

One thing that could cut down on the amount of disposed solid waste is the salvaging of some kinds of material.

The problem of solid waste disposal could be simplified to some extent or reduced if salvaging and reclamation steps were taken by municipal and private means. Salvage operations, which were profitable a number of years ago, have largely been abandoned for economic reasons, interference with normal disposal operations, or because of nuisances the operations created.

New procedures for salvaging wastes are needed to replace antiquated, costly and undesirable methods of scavenging, sorting and hand picking. Because disposal costs are often financed from



Such solid wastes as wrecked and useless automobiles are used as fill in a low marshy area.

general funds or lumped with other operations, many large producers of wastes are not aware of the true cost of refuse disposal. There is little or no incentive to reduce the quantity of wastes or find new uses for waste material.

Examples of wastes and possible uses that could be explored are:

- * organic wastes made into animal feed, antibiotics, enzymes, vitamins, or other pharmaceuticals and plastics;

- * discarded tires and greases and oils from gasoline stations, machine shops and similar places burned as fuel in special furnaces;

- * paper wastes used for wallboard, acoustical and insulating materials, spray mulches, fertilizer and insecticide carriers; and

- * fly ash as additive to concrete or insulating materials, soil stabilizer or carrier for fertilizers and insecticides.

Some wastes, such as abandoned automobiles, barnyard wastes and citrus pulp are already being salvaged for use in steel production, agriculture land restorer and animal feed.

Proper Home Refuse Storage and Disposal

We have tried to present a picture of the solid waste problem as it exists in Florida and the United States. There is no simple solution. Sweeping it behind the door won't work and private citizens and public officials who try to ignore the problem find that it keeps creeping out to embarrass them in complaints of unsightly landscapes and evil-smelling dumps.

But what can you do to help your community?

At home you can

- * provide and use proper, water-tight containers to store garbage and refuse,
- * maintain the containers in a sanitary condition,
- * drain and wrap garbage in newspapers and bundle bulky rubbish,
- * place the containers in the right place at the proper time for garbage pick-up,
- * separate garbage, ashes and rubbish if required to do so by the pick-up service,
- * remove any trash from yard or attic each week and set it out for collection, and
- * support governmental agencies trying to provide proper collection and disposal.

Also you should become acquainted with your solid waste disposal service operation and know that your community is operating a safe and sanitary landfill or incinerator. If there is an open or burning dump in your community, find out how the situation can be corrected through your local government. Proper handling and disposal of solid wastes are necessary for a safe, comfortable home and an attractive, healthful community.

FLORIDA HEALTH NOTES



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OCTOBER 1967

*A Journal of Public Health
in Dade County*

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A Memorial

Public Health
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A Memorial to T. E. Cato

PUBLIC HEALTH in DADE COUNTY

Dade County, Florida—where glittering hotels nudge each other for miles along the sunny beaches and where the Gulf Stream caresses the shore with a year 'round tenderness.

Dade County, Florida—where illiterate bands of migrants stoop in the hot sun to pick vegetables and Miccosukees spear gar from primitive canoes.

Dade County, Florida—where refugees from another country, with another tongue and culture, swarm by the thousands, confused and dispossessed, struggling to find new homes to replace those wrested from them by a tyrant.

* * * * *

This is the geographically-fragmented and ethnically-kaleidoscopic area in which Turner Elam Cato, M.D., M.P.H., strove for 27 years to lead and guide the forces of public health, not only to meet the needs of the present but to anticipate those of the future.

Dr. Cato, director of the Dade County Department of Public Health since 1942, died July 8, 1967, and left behind him an efficient, effective and far-reaching public health complex seldom seen in the nation.

Vexation in Paradise

The attractions of Miami, Miami Beach and their municipal neighbors need no description. They are well-known phenomena of American and international fame. But this is modern history.

(Cover photo) The Miami city skyline is representative of metropolitan Dade County which Dr. T. E. Cato served as director of the Dade County Department of Public Health.



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Within the lifetime of people still able to remember, South Florida was, according to a member of Congress, "an uninhabitable morass of jungle and heat, snakes and mosquitoes, alligators and savage Indians."

The Seminole wars had ended but the other hazards remained. In the late 19th Century the only access was by sea. Key West was the only city in South Florida and that was isolated on an island a couple of hundred miles to the south. Miami, from *mayami* (very big), was a trading post and mail drop with about a dozen people. A few people had made unsuccessful ventures into fruit and vegetable growing in the narrow strip of land between the coast of the Everglades, but there was one man who was to come and help change the destiny of South Florida.

Henry M. Flagler, developer of North and Central Florida and railroad builder, was jolted in St. Augustine when the "great freeze" of 1894 wiped out the citrus industry. Mrs. Julia Tuttle, owner of most of the land that is now downtown Miami, sent him a bouquet of orange blossoms and he started building his railroad on to Miami. Later with colleagues John S. Collins, Carl F. Fisher, Glenn Curtis and others, he poured money in staggering sums into the development of the area. A chain reaction boom developed, and in 1926 outlying inaccessible swampland was selling for \$25,000 an acre. The bubble burst; the land went begging at \$5 an acre; but today this same land has been filled and there are stores, homes, schools and churches where a few decades ago there were mangrove swamps.

The real estate crash of 1926 was followed by the depression of 1929, and this thwarted further expansion. The hurricane of 1935, in which trainloads of Civil Conservation Corps workers were

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washed into the sea and undiked Lake Okeechobee spread across the land, took a terrible toll. Glades and salt marsh mosquitoes were nuisances when the wind blew from the swamps. Hastily planned sewers poured human waste in appalling volume into beautiful Biscayne Bay.

Early Public Health Efforts

In 1904, when controls were available for yellow fever and malaria, South Florida was affected by the fact that the United States was starting to build the Panama Canal. Flagler was building his "impossible" railroad across the miles of shallow water to Key West. Dr. J. Y. Porter, Florida's first health officer, and his small staff were beating back public health hazards with brute force tactics.

They were having success, too, for in 1907, Dr. Porter reported that there was "not a single case" of contagious disease among the thousands of workers who were employed by Flagler, and that the "isolation hospital," established for their care, was standing empty with its armed guard idling in the doorway. Dr. Porter went on to praise the Flagler forces for taking complete responsibility for the care of their own incapacitated, saying that it saved the state and county the expense of caring for those who would have otherwise become indigent. He was strong in his praise of the sanitary engineering done by the railroad in its work camps, adding that as a result there were no cases of typhoid fever.

In 1909, Dr. Porter reported an outbreak of 15 cases of typhoid in the South Florida area but the incipient epidemic died out when instructions were given to scald all milk and boil drinking water from private wells. The year was called "a very successful one for public health."

Beginning in the Midst of Crisis

Despite the depression of the 1930s, the vision of a warm, Florida beach in mid-winter was being held up to millions of Americans. As investors and visitors they came. Efforts to keep hotel construction ahead of the demand were described as frantic. People



In 1922 Miami Beach's Collins Avenue was a narrow street set with palm trees. Although the climate and sunshine were already present, the hotels and apartment houses were yet to come. Compare this view with the one of Collins Avenue today on page 360.

with no experience were pressed into service as kitchen help. Flimsy, gaudily-painted shacks were thrown up to house carnival-type businesses grasping for the tourist dollar. Pollution increased. Giant rats abandoned ships in the harbor and found homes in the rubbish heaps and shabby buildings. As a principal port-of-entry, the area was in danger of being infected by persons coming from South and Central America, Africa or Asia where pestilential disease existed.

But in addition to the tourist, huckster and shill, there were citizens willing and anxious to see that things were done right, public health protected and modern agencies and facilities constructed for the purpose.

The stage for the formation of the Dade County Department of Public Health was set in 1931 when the Florida Legislature passed Florida Statute 154 which established the full-time local health units "for the control and eradication of preventable diseases

and inculcate modern scientific methods of hygiene, sanitation, and the prevention of communicable diseases."

In 1939, the Dade County Board of Commissioners said that it could not find its way clear to establish a county health unit and the \$15,000 allotted for that purpose was stricken from the budget.

But in 1940, the Dade County health unit was formed through the efforts of County Commissioner Charles H. Crandon, members of the Dade County Medical Association, and other civic leaders with Dr. Cato as the health commissioner. At the time the cities of Miami, Miami Beach, Coral Gables, plus 10 school districts, were giving some health services to residents of the area. A survey of public health and sanitation in the county was made in October 1941 under the direction of the U.S. Public Health Service and the State Board of Health. It found that "health control and sanitation in the Miami area . . . inadequate and not fitted to the present needs." In the County Court House were two health departments, one dealing solely with health matters applying to Miami and the other concerned with the county program excluding Miami. The City of Miami Beach maintained several nurses and a sanitary inspector working under a part-time county health officer. Coral Gables had a full-time sanitary inspector and a nurse operating independent of the county health unit.

When Dr. Cato arrived in Miami in 1940, the county had set aside \$7500 for the health unit. This amount was matched by state and federal appropriations to be expended through the State Board of Health. According to plans for the new unit, the duties were to be divided into (1) the collection, classification, compilation and analysis of vital statistics; (2) education work in health and hygiene; (3) management and control of communicable diseases; (4) laboratory work; and (5) sanitation.

One thing that the survey of 1941 recommended was a single health authority for Dade County founded on state law to provide stability. It also recommended that within two years the health authority should be expanded to the size commensurate with a population of 500,000 persons and that it should be provided with plans for further expansion to meet increasing needs.



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Dr. Cato was well qualified for the position of County Health Officer. He entered public health work on graduation from the University of Tennessee Medical School in 1928. He served one year as health officer in Lamar County, Alabama; another year in a like position in Gilmer County, West Virginia, and from 1931 to 1937, in a similar post in Hancock County of the same state.

In 1937, Dr. Cato became health officer of West Virginia's largest county, Kanawha, where he was credited with the county's model sanitary regulations for food handlers and dairies under county supervision, and the establishment of modern venereal disease and tuberculosis clinics. He became a leader in immunization work for infants and mothers and the number of diphtheria and typhoid cases dropped after his policies were put into effect.

Dade County Commissioner Crandon; A. W. Newitt, M.D., Director of the Bureau of Local Health Services of the State Board of Health; A. B. Curry, city manager of Miami; and two officers from the U. S. Public Health Service, Wilson T. Sowder and A. I. Kernish, appeared before various city and county governmental bodies to present the plans for a countywide health unit. (Dr. Sowder became the State Health Officer for Florida in 1945 and still holds that position; Dr. Kernish is a practicing physician in Coral Gables.)

The municipalities and school board agreed to participate and put up \$148,000 requested which were augmented by state and federal money. Plans were made to spend the money wisely and according to Dr. Newitt with "no frills and no fancy quarters but simply the kind of a health department that can dig in and do the work and do a good job."

The duplication and overlapping, which is always observed where separate health departments exist in an area the size of Dade County, came to an end on November 10, 1942, with consolidation of all the city health departments and the county health unit into the Dade County Department of Public Health. A retired U.S. Public Health Service officer, T. H. D. Griffiths, was named the director and Dr. Cato was made assistant director. In

a few months, Dr. Griffiths resigned and Dr. Cato became county health officer, a position he held until his death.

The consolidation was the first step toward the metropolitan government which came into being in Dade County 15 years later. This form of government was described as "the first attempt in the country to establish a new type of overall political unit covering a complete metropolitan area."

The War Period

The proponents of consolidation were assisted by the facts that World War Two had begun; a number of military installations with an estimated military population of 10,000 had moved into Dade County, which had 312,000 persons; and there was a rising need for supervision and control of environmental health. Nearly every hotel in Miami Beach became a training school for Armed Forces officers. The venereal disease rate in Florida was the worst in the nation; 2.6 per cent of white men and 28.70 per cent of Negro men examined for military service from Dade County had syphilis.

The bars, restaurants and food stores frequented by servicemen were checked by sanitarians but the rapid turnover of restaurant employees necessitated the employment of untrained and inexperienced workers. There was difficulty in procuring metal garbage cans and equipment. Food and drink establishments were found to be reusing paper plates; a deliveryman was found carrying unwrapped bread on a dirty and sweaty arm. Enforcement of stringent sanitary laws improved the condition in Dade County restaurants.

Available records show that typhus infection was most frequently contracted in the business places or other congested areas which were heavily infested with rats, and rodent control efforts were confined to these areas of Dade County communities. Water supplies were regularly checked but in some cases the recommended changes could not be accomplished due to the shortage of plumbers and war conditions. Shallow wells with pitcher pumps were dangerously close to pit privies. Drainage wells, of which there were at least 281 in Dade County, contributed to the pollution of underground water. Out of 205 wells tested in 1943, 156 showed contamination.

Medical care for servicemen's wives and infants was financed by the Children's Bureau but authorization for the service had to come from the county health unit. Because the Army and Navy Medical Corps had a number of trained obstetricians in Dade County, the State Board of Health and Federal Government agreed that servicemen's cases had to be handled by Army and Navy physicians. When maternal and infant care was given to service families, the work of the health unit's nursing service doubled in one month.

The cost of operating the Dade County Department of Public Health during the war year of 1944 was \$238,000, of which \$170,900 came from local funds. The per capita cost was 54 cents, far below the recommended per capita cost of one dollar. Including special projects, the 1966 budget was nearly \$5 million, of which \$1.3 million was from local funds and the per capita cost was \$1.30.

The Post-War Period — Expansion

From 1945, Miami, Miami Beach and Dade County became synonymous with "a spot in the sunshine." Through the efforts of business and governmental agencies and the attraction of the sub-tropical climate, tourists flocked to the area to sample the pleasures of Florida. The strip from Miami northward to Palm Beach became known as Florida's Gold Coast; thousands of former servicemen, who had been delighted with the area during the war years, came back in the post-war period to settle, start businesses and raise their families.

Because these were people from other parts of the United States who had been used to urban health services and sanitation control, the Dade County Department of Public Health developed new programs to meet the demands. Because cities were being created out of mangrove swamps and palmetto-covered fields, they had no tradition on which to build.

The county health unit started with the basic public health programs of sanitation, maternal and child health, nursing, vital statistics and dental health, plus communicable disease, tuberculosis and venereal disease control. To this was added a large number of health services and programs over the next two decades. Divisions

TURNER ELAM CATO, M.D., M.P.H.

Dade County, the State of Florida and organized medicine lost a most valued friend when Dr. T. Elam Cato died in July, 1967.

A top-flight administrator of the Dade County Department of Public Health, he was truly a Master of Public Health. Under his leadership, the Department had become one of the finest in the United States. Though understaffed constantly, he overcame the myriad problems with foresight, wisdom and resourcefulness.

We shall all miss his soft voice and guiding hand. We shall never forget his leadership, his knowledge and his inborn humility. His memorial stands in Miami on N. W. 14th Street which he built and loved.

Jack Q. Cleveland

Jack Q. Cleveland, M.D., Chairman
Dade County Health Advisory Board
336 Alhambra Circle
Coral Gables, Florida 33134

July 31, 1967

of sanitary engineering, health education, mental health and research were added; nutrition consultation services and social work services were started and clinics for retarded children, premature infants and child guidance were included. Within the past seven years programs in air pollution control, health mobilization, hospitals and nursing home inspection and licensure, adult health and aging programs, chronic diseases, comprehensive health services for children and youth, and maternity and infant care have been appended. Perhaps one of the biggest jobs given the Dade County Department of Public Health was the Cuban Refugee Health Program. More will be said later about this and some of the other more outstanding programs. A laboratory was planned in the original setup but this became a function of the State Board of Health's chain of regional laboratories.

An example of how the health unit has grown is shown by the way the staff has expanded to meet the needs of growing Dade



County. In 1945, the staff consisted of 92 persons, including three physicians, 33 nurses, 23 sanitarians and 20 clerks. The 1966 staff totaled over 600 persons, including approximately 45 physicians, 165 public health nurses, 57 sanitarians, 70 clerical personnel and five sanitary engineers, plus employees in special programs and other disciplines.



Dade County has a wide range of social groups—ranging from the inhabitants of glamorous Miami Beach (opposite page) to the Miccosukees who dwell in thatched-roof chickees along the Tamiami Trail.

Although the Dade County Department of Public Health frequently has had financial difficulty, it still is one of the best county health units in the nation. The expansion of the health unit could not have been possible without the cooperation of numerous organizations, schools, hospitals, voluntary health agencies, governmental offices and individuals. From the days of 1944, when the health department cooperated with the Army and Navy by inspecting prenatal clinics at military installations, to the present, with public health field experiences being provided nursing students from Barry College, University of Miami School of Nursing, Miami-Dade Junior College, Jackson Memorial Hospital and other institutions, the cooperation has always been on the highest level.

Over the years the county health unit has cooperated:

- with the Florida State Board of Health, U.S. Public Health Service, U. S. Children's Bureau and other state and governmental agencies in a wide number of surveys, programs and projects;
- with the University of Miami School of Medicine, Jackson Memorial Hospital, Dade County Medical Association and other



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With the passing of Dr. T. E. Cato, public health lost one of its best administrators and many of us lost a staunch and valued friend.

I have known Elam for many years and have admired and respected his abilities as a leader in the public health field. His warm and friendly manner contributed to a pleasant association, both on the occasion of professional visits and during social functions.

His sincerity, untiring devotion to duty, and wise leadership has contributed to the success of the program in every position that he has so ably occupied, and particularly in his role as Director of the Dade County Department of Public Health.

No finer monument could be erected to this man than the realization that he devoted his life to the betterment of mankind.

I consider myself fortunate to have known him and to be numbered among his friends who are grieved of his passing.

Hugh B. Cottrell

Hugh B. Cottrell, M.D.
Medical Director
U.S. Public Health Service

organizations in such programs as the Premature Demonstration Center, Child Development Center, Diagnostic Hearing Clinic, Maternal and Infant Care Project and Anti-Convulsive Clinics;

- with Jackson Memorial and Mt. Sinai Hospitals in poison control centers;

- with the Dade County Tuberculosis Association in x-ray screening programs;

- with the Dade County Board of Public Instruction in the mental hygiene clinic;

- with the Dade County Civil Defense in implementing the civil defense program;

- with the University of Florida, Family Service Agency, Dade County Department of Welfare, Juvenile Court and Dade County Board of Public Instruction in the Child Guidance Clinics;

- with the Vocational, Technical and Adult Education Division of the Dade County Schools in the training of practical nurses, dental technicians and other paramedical personnel; and

- with many other organizations and agencies in educational and health service programs too numerous to mention.

Over the years since 1942 a number of problems were faced by Dr. Cato and his staff. Many of these problems continue today while others were met and conquered. One of these latter was poliomyelitis, which was eradicated through great immunization campaigns. In 1957, Salk vaccine injections were given to nearly 300,000 persons. However, polio persisted and in 1960 over 413,000 Dade County residents under 40 years of age were given one-dose Cox oral vaccine in one of the largest field trials ever organized.

Public health nurses carry on one of the biggest continuing programs which keeps expanding. Today a total of 96 clinic sessions is held weekly in the eight health centers. Over the years they have examined children in schools with the assistance of volunteers from the Parent-Teacher Association; supervised midwives when they were numerous; visited homes of accident patients to help prevent repetition of such accidents; given home nursing service to persons with chronic diseases or long-term illnesses; and instructed new mothers in the care of infants. The Visiting Nurse Association, founded in Dade County in 1945, continues today as a part of the public health program with the head of the health department's nursing division as director. The Association was certified in 1966 as a Home Health Agency under Medicare.

Continuing projects in clinics and public education emanates from the Venereal Disease Control Program. Public health nurses

Dr. T. B.

Elam Cato was a wonderful human being, a gentleman, and an outstanding public health physician. He was well trained in public health, and had considerable experience elsewhere, before he became the Health Officer of the then recently consolidated countywide health department in Dade County. He made excellent use of his training and experience. These assets plus his intelligence, honesty, courage, forthrightness, and persistence all contributed to the development and maintenance of one of the finest local health departments in the nation. This health department reflected Dr. Cato's devotion to duty and his progressiveness. It kept up with the times. His programs not only included all of the traditional aspects of public health but developed practically all of the newer ones which have come to the fore during the past two decades. He wove the new and the traditional, including such unique programs as comprehensive health care for the Cuban refugees into a coordinated and highly effective pattern of countywide health services which commanded the



respect of every segment and his colleagues elsewhere in the nation. His never maintained in

make home visits to patients and assist the special venereal disease investigators who enlist the help of physicians, private laboratories and hospitals in detecting syphilis, gonorrhea and other venereal diseases and sending people to the clinic for treatment.

From the beginning the Dade County Department of Public Health's sanitarians have inspected food and drink establishments, dairies and milk distributors, slaughterhouses, swimming pools, septic tanks and labor camps. As the health unit was expanded, child day care centers, hospitals and nursing homes, convalescent homes, mobile home parks, schools and airport sanitation became additional programs for inspection. In an effort to secure better

lam Cato



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local, state and federal agencies, but always functioned in the fullest spirit of cooperation. He developed unusually close ties with the medical school and always worked closely with the State Board of Health in the state-wide public health programs. Through these and many other activities he and his programs played an ever increasing and vital role in the total national effort in the field of health.

His personal life and public career represents a glowing example of one man's dedication and contribution to humanity of which Dade County, the State of Florida, and the entire nation can be proud. It is because of his outstanding accomplishments that the Florida State Board of Health pays him the unique tribute of dedicating to his memory this entire issue of its monthly publication of *Health Notes*.

Wilson T. Sowder, M.D.

Wilson T. Sowder, M.D., M.P.H.
Florida State Health Officer

sanitation procedures in food and drink establishments, food handlers schools have been in operation since 1944.

Hurricanes, which threaten Florida, along with other areas in the summer months, are feared less today because of advance warnings from the U.S. Weather Bureau. However, such storms when they occur, bring floods—with the possibility of typhoid from polluted drinking water—and interruption of electricity, with the failure of refrigerators and resulting food spoilage. Sanitarians condemn huge amounts of spoiled foods and check private wells; public health nurses conduct typhoid immunization clinics in cooperation with the American Red Cross.

The Cuban Influx

The year 1959 saw the rise of the Castro government in Cuba and the beginning of the waves of refugees who were seeking asylum from the Communist regime. The United States opened its doors to any Cuban of goodwill who wanted to come to this country seeking democracy, freedom and peace. Because Dade County was the nearest point to the island, it received the impact of the migration. Over a quarter of a million Cubans have arrived since 1961. Many of the refugees settled in the Dade County area with the hope of soon returning to their homeland. Others have



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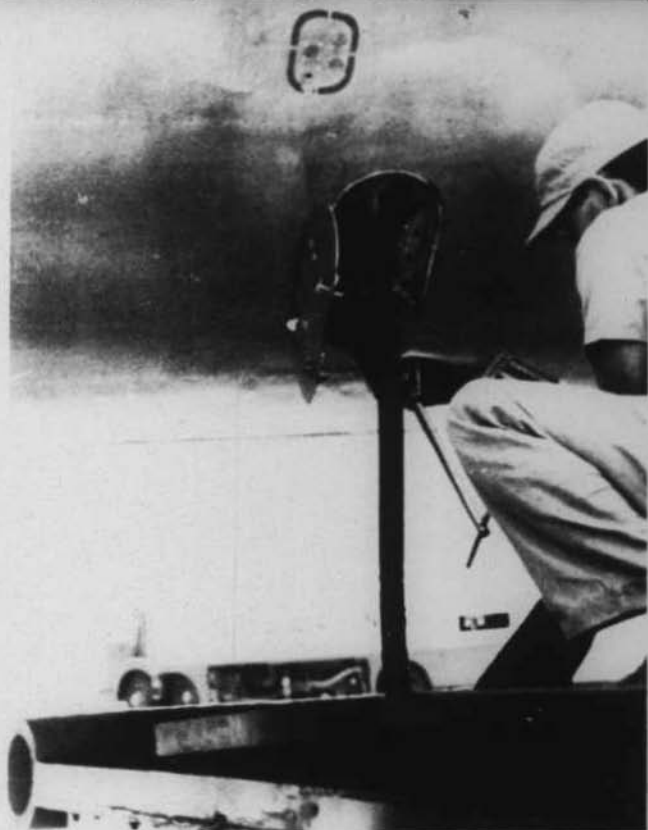
At the clinics held in Freedom Tower (former home of the **Miami News**) the Cubans receive medical screening of all new arrivals, immunizations, chest x-rays, provisions for medical diagnosis and treatment for those who are indigent, referral to local community facilities for those services not available at the clinics, referrals to health department clinics (well-baby, maternity, venereal disease, etc.) and provisions for emergency dental services. Out of the 125,000 Cubans in the Dade County area, an average of

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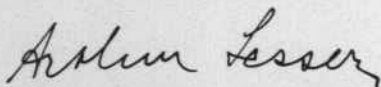


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As head of Florida's largest county health department, Dr. T. E. Cato responded to the challenge of providing health services of high quality. His leadership was progressive. Of particular interest are the programs he established for mothers and children and for Cuban refugees. He early saw the need for a maternity and infant care project and family planning service for the Miami area, and enlisted community support as well for the children and youth project in order to give Dade County a well-rounded program of services to mother and children.



Arthur J. Lesser, M.D., Deputy Chief
Children's Bureau
U.S. Department of Health, Education,
and Welfare

530 persons is seen daily at the Cuban Refugee Center, which has a well-organized medical staff, nurses, x-ray laboratory, clerical personnel and pharmacy.

Over 875 Cubans still arrive weekly in the two-planes-a-day airlift from Cuba. These persons are examined at another clinic at the Miami International Airport where they are given chest x-rays and immunization. Those who are awaiting the arrival of relatives or are holding reservations to other cities stay at Freedom House which is operated by the Cuban Refugee Program. Here they receive food, clothing, rooms for sleeping and medical services, if needed.

Outstanding Dade County Programs

Dr. Cato's administration of the Dade County Department of Public Health was an outstanding example of the application of countywide public health services. Following are some of the im-

portant programs and projects which were developed in Dade County.

The Premature Demonstration Center provides not only for the care of premature infants and the training of nurses but conducts research into the saving of lives of such babies and carries on studies to help prevent premature births. Ten years ago the premature rate at the Center was 20 per cent of all births. Today, through programs of maternity care, better nutrition and family planning, the rate has been cut to 12 per cent and the death rate of premature babies has been cut from 17 to 12 per cent.

The Child Development Center was originally started as a clinic where a child suspected of being mentally retarded could be evaluated and diagnosed. In recent years, the emphasis has been changed to include the training of professional personnel and the giving of consultative services. Research has been carried on in genetics, cytology, phenylketonuria and other causes of mental retardation.

The Reservation Indian Health Care Program deals with some 180 Miccosukees who live along the Tamiami Trail and is financed entirely with federal funds. A multiphasic screening program in 1963 showed that the health of the Indians was far below that of other county residents. Now in cooperation with the Bureau of Indian Affairs, they are provided with physician office visits; dental services; fees for laboratory, prosthetics, drugs and physician's services; and hospitalization.

Migrant health had always been a concern of Dr. Cato and his staff. From the beginning, the improvement of migrant labor camps was an uphill battle. While some camp operators were most cooperative, the conditions of other camps were so bad that investigators were horrified and camp owners were told to correct sanitary conditions or be taken to court. Stricter regulations were instituted and all migrant camps now are required to meet these standards in order to obtain licenses to house workers. A number of clinics are held in migrant camps and provide much needed medical and dental care for hundreds of migrants who had no other access to these resources.

The **Maternal and Infant Care Project** carries some 5000 mothers and children under one year of age on its records. An average of 2800 maternal and 1200 pediatric visits are made to homes of patients by the public health nurses during a week, and 25 clinics are conducted in seven health centers. All maternity patients are given comprehensive medical care; those who have high risk pregnancies (in which there are complications) are given hospitalization and total care. Nearly 90 per cent of the post-partum patients return for family planning and examinations. The women are encouraged to space their children and limit the number to those they can care for.

Research was one part of the Dade County Department of Public Health in which Dr. Cato took a big interest. The research section, organized in 1957, was one of the first of its kind in the Southeastern United States, and its progress was followed by the nation's public health officials. Working with the State Board of



Children play in the diagnostic playroom of the Child Development Center, one of the cooperative programs carried on by the Dade County Department of Public Health, University of Miami School of Medicine, Jackson Memorial Hospital and other organizations and institutions.

Health, University of Miami School of Medicine, National Institutes of Health and other governmental agencies, the Dade County Department of Welfare and other county health groups, the research section has carried on a number of outstanding studies. A few of these are: epidemiologic study of nursing home residents; investigation of syphilis deaths in Dade County; epidemiologic investigation of accidents involving sliding glass doors; determination of prenatal hemoglobin levels as related to age, trimester and parity; and the evaluation of neurological and sensory disease problems in Dade County.

Rodent Control has been important in the Dade County Department of Public Health since its inception. Typhus was a problem for a number of years. Attempts were made to eradicate rats with red squill "torpedoes" scattered in such places as business districts, parks and the banks of the Miami River and canals. But the rats weren't killed and typhus persisted. After World War Two, DDT was available and the health unit used it lavishly wherever rats ran. The fleas were killed but the rats are still around. Warfarin is used for general purposes but where the sanitarians have complete control (no people or pets) an extremely effective rat poison, 1018, is used. Instructions on rat-proofing buildings are given out and areas are cleared of trash to eliminate rodent harborage.

The **Airport Sanitation** program carried on by the Dade County Department of Public Health at the Miami International Airport is a leader in its field. The airport complex handles a total of seven million passengers a year. The sanitarian in charge of this program oversees such facilities as in-flight catering kitchens, food service establishments and sanitary facilities in the airport buildings, and sanitary sewage disposal of wastes from aircraft.

The **Health Assessment Program** is a pilot project carried on under contract with the U.S. Department of Health, Education and Welfare and the State Board of Health at the Miami Beach Health Center. Permanent residents of Dade County who are over 65 years

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The Community Studies in Pesticides were started because of the national concern regarding pesticides and the 13 deaths in Dade County in 1963 which were attributed to pesticides. The county was chosen because of the climate, the agriculture carried on in the western portion of the county and the amount of pesticides used. Since the program began, over 80 poisonings due to organophosphate pesticides have been investigated, and 114 persons are receiving monthly blood and urine tests for general health documentation under an occupational health program.

Pollution Control has been an important program in this resort city. In 1947 Philip Wylie published a magazine article, "Florida—Polluted Paradise," in which he said that Biscayne Bay was "the

color of mildew," that "ebb tide carries some of its polluted water out in front of Miami Beach twice daily," and that a number of sewers belched forth sewage into the azure pride of the twin cities. Other writers have jumped on the same bandwagon, including authors of a book with the same title.

A survey conducted by the State Board of Health in 1949 bore out Wylie's charges. Conditions were such that unless steps were taken there would be further threats to public health which would have an adverse effect upon the economic, aesthetic, recreational and commercial interests of the metropolitan area.

The Dade County Department of Public Health and Miami took firm action to clean up Biscayne Bay. Interceptor lines, totaling 16 miles in length, were built along the shore and the Miami River, picking up sewage that was being emptied into the blue waters. These lines were connected to a force main which was run under

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the bay to a treatment plant on Virginia Key. When this plant went into operation, it could handle 47 million gallons of sewage a day. Expansion can bring the capacity up to 153 million gallons, sufficient to handle a population of 460,000 persons.

Today there are more than 90 sewage treatment plants serving more than 47 per cent of the population. The remainder are served by septic tanks but there is a continual campaign to bring sewerage systems to more of the people. The existing plants serve motels, subdevelopments, industrial plants, institutions and municipalities. Biscayne Bay in 1967 is again a recreational playground.

Miami's air is about 50 per cent cleaner than that of most other American cities of comparable size. Two main reasons for this are the absence of heavy industry with accompanying smoke and dust, and prevailing easterly winds which bring pure freshly-washed air from the moderating Gulf Stream and the Atlantic Ocean. However, the Air Pollution Control Division of the Dade County Department of Public Health has laid the foundation for air quality management programs to combat such problems as burning of automobiles and commercial barbecues.

The Dade County Health Advisory Board

The Health Advisory Board was formed at the beginning of the consolidated health department to set policies for the Dade County Department of Public Health but it carried no administrative function. Charles H. Crandon, the County Commissioner who fought successfully for the health department, served as the Board's first chairman. Problems facing the Board at its first meeting were rat infestation, sanitation in restaurants, the large number of persons receiving treatment for venereal disease, and the shortage of nurses.

During the span of the next 25 years, the Board dealt with such problems as inadequate hospital space, garbage collections, fly and rodent control, sewage disposal, fluoridation, migrant camps and health certificates. Dr. Cato had various members of his staff give reports at the Board's meetings. One problem that con-

tinued for years was the bringing of services to the people, and health centers were planned for various sections of Dade County. Likewise the Board participated in the planning of the Dade-Miami Civic Center in which the public health central headquarters was one of the first buildings erected. Since 1958, other buildings were constructed which house the police academy, county jail, public safety, judicial department, medical centers, hospitals and local offices of state agencies.

The Dade County Department of Public Health ran smoothly under the administration of Dr. Cato and the Health Advisory Board. There was noted in the minutes of a meeting in 1946 that there had been no interference from the Dade County Board of Commissioners because of the smooth operation. Besides Mr. Crandon, other men who served as chairmen were: County Commissioners Preston B. Bird, Jesse H. Yarborough and Ralph A. Fossey; Ira F. Williard; Dewey R. Dedrick; and Dr. Jack Q. Cleveland, who is current chairman and also president-elect of the Florida Medical Association.

Dr. Cato - Physician, Administrator, Civic Leader

What sort of man was T. E. Cato in the minds of those who followed his leadership, some of them for the full 27 years of his Dade County career?

Public Health on a Personal Basis

The story of Dade County Department of Public Health isn't one told in cold statistics of so many births, deaths, chest x-rays, water samples taken, restaurants inspected, children vaccinated, sanitary surveys conducted. These figures are important in showing dangers to personal health, problems eliminated and new menaces developing. To Dr. Cato and his aides, the important part of their work was the day-to-day contact with individuals who make up the general public and how they eventually wound up in reports as statistics.

"Good health must be on a personal basis," Dr. Cato said one time. "Certainly it is a personal thing to the person involved. We try to make the individual feel his case is extremely important. It is to him. It is to us."

"He made you feel important," said one of his staff. "He was easy to talk to, and wanted to help you solve your problems. He was—well, available, that is if you could find him. He wasn't a desk man."

"He visited all the clinics and project locations regularly," said another. "He kept his finger on every detail of everything. He delegated responsibility but he knew everything that was going on."

"He used persuasion to try to get you to accept his point of view. But if that didn't work, he just told you—do it. He was one of the strongest personalities I've ever met," said another of his associates.

But as one of his closest colleagues summed it up, "He was the power. He called for results and he got them. If you deserved a compliment, you got it—and vice versa."

In his citation for the Meritorious Service Award of the Florida Public Health Association in 1962, it is stated that his standing among his medical colleagues in public health, professional education and private practice might well be assessed in the fact that at his insistence, along with that of others, a Department of Preventive Medicine and Public Health was established at the University of Miami School of Medicine.

The selection of Miami as the site for the final field trial of Cox oral polio vaccine can be attributed in great part to the reputation and high standing of Dr. Cato and his agency. He was an active, respected and in some instances an office-holding-member of nine professional associations, including his local, state and national medical associations. The staff of the Cuban Emergency Medical Dispensary gave him a plaque in recognition of his efforts in their behalf.

One of the major contributions made by Dr. Cato to the future of public health administration in Dade County was his effort to decentralize the distribution of public health services—to bring services closer to the people. According to R. Ray Goode, budget



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director in the office of the manager of the metropolitan government in Dade County, Dr. Cato's desire was to bring public health services into every school and region of the county. Since the 1940s he preached a sermon that was to become the basic philosophy of the "War on Poverty" in the mid-1960s: indigent individuals and families will not avail themselves of medical and health services if the services are inaccessible due to transportation difficulties. Poor people often cannot, and more often will not, seek preventive services without easy access and adequate public health education. Unless both items (accessibility and public health education) are present, the people most in need of preventive medical care will forego such care until an emergency arises requiring hospitalization. By then it is often too late, and death or crippling diseases and unproductive lives result.

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By the time of Dr. Cato's death, public health clinics had been established all over Dade County and plans were nearly completed for one of his long-sought clinics in the Cutler Ridge area of South Dade. The Cutler Ridge project involved a goal long desired by Dr. Cato—the concept of multi-service centers on an area-wide basis. He realized the importance of having hospital emergency room and diagnostic facilities on the same site with the regular health clinic. Through his efforts, and those of other county officials, this project was approved as a joint Public Health-Department of Hospitals operation. A similar project is being planned for North Dade.

A Mission Well-done

It would be brash indeed for **Florida Health Notes** to point out didactically that other county health departments could well profit from the example set by the man and the organization we have had under review. The Dade County Department of Public Health is nationally recognized. It is known to have tackled and brought to bay over the years many routine, and many unique problems. It is known to have gained and held public esteem to the point that its annual reports do not reflect any significant struggle for fiscal sustenance.

It is known to have followed consistently the policy of taking needed services to the people, time and location-wise, rather than calling the people to a central, and often inconvenient place. It is known to have looked upon its mission as being a part of a whole, and to have led in the movement to bring together in action and effectiveness many agencies, disciplines and interests for the benefit of the overall program.

Dade County is most fortunate, and Florida is grateful in having had the leadership, strength and foresightedness shown by this public health organization. In years to come Dade County, Florida, will surely continue to lead, to pioneer and to accomplish great things in public health.

Illustrations: Cover and pages 360 and 377 courtesy of Miami-Metro News Bureau; pages 354, 372 and 373, Florida News Bureau.

FLORIDA HEALTH NOTES



VOLUME 59—NO. 11

**Food, the Laboratory
and YOU**

NOVEMBER 1967

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In a State Board of Health laboratory, technicians check in milk samples for testing (top), count the bacteria in a milk specimen (above) and prepare specimens for butter fat testing (right).

FOOD, the Laboratory and YOU

THE Quiet Service — the competent, efficient, behind-the-scenes, and sometimes seemingly miraculous processes that go on in the State Board of Health's laboratories — plays a vital part in keeping Florida's citizens and its visitors in good health.

The laboratories — and those skilled persons who work in and with them — are in closer daily touch with the public than you might suspect. What goes on inside those walls of white, around those racks of glass, between refrigerators and containers of stainless steel, under powerful microscopes, and in test tubes is often the means of keeping you and your family healthy, of discovering as quickly as possible what may have made you ill and thus preventing its spread to other persons.

Most people eat three times a day. Many eat one or more meals a day in one of Florida's 20,360 eating or drinking establishments. Much of the meats and seafoods comes from 146 abattoirs and 167 shellfish and crustacea processing plants in the state. The housewife buys her food from one or more of the state's 7384 grocery and meat markets. There are over 1280 other types of food handling and processing establishments. Thus, there are countless chances in the long sequence of many persons handling food in various places for hostile organisms — animal and vegetable — to creep in and cause illness. But because of the vigilance of the personnel in State Board of Health laboratories in Jacksonville, Miami, Tampa, West Palm Beach, Orlando, Tallahassee and Pensacola; and county laboratories in Brevard and Pinellas; and that of sanitarians who work out of County Health Departments, the number of illnesses due to mishandling of food is remarkably small.

(Cover photo) A family dinner is usually without incident, but should food poisoning occur, the State Board of Health laboratories are ready to help find the cause of the disease and prevent its spread.



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HE Quiet Service — the competent, efficient, behind-the-scenes, and sometimes seemingly miraculous processes that go on in the State Board of Health's laboratories — plays a vital part in keeping Florida's citizens and its visitors in good health.

The laboratories — and those skilled persons who work in and with them — are in closer daily touch with the public than you might suspect. What goes on inside those walls of white, around those racks of glass, between refrigerators and containers of stainless steel, under powerful microscopes, and in test tubes is often the means of keeping you and your family healthy, of discovering as quickly as possible what may have made you ill and thus preventing its spread to other persons.

Most people eat three times a day. Many eat one or more meals a day in one of Florida's 20,360 eating or drinking establishments. Much of the meats and seafoods comes from 146 abattoirs and 167 shellfish and crustacea processing plants in the state. The housewife buys her food from one or more of the state's 7384 grocery and meat markets. There are over 1280 other types of food handling and processing establishments. Thus, there are countless chances in the long sequence of many persons handling food in various places for hostile organisms — animal and vegetable — to creep in and cause illness. But because of the vigilance of the personnel in State Board of Health laboratories in Jacksonville, Miami, Tampa, West Palm Beach, Orlando, Tallahassee and Pensacola; and county laboratories in Brevard and Pinellas; and that of sanitarians who work out of County Health Departments, the number of illnesses due to mishandling of food is remarkably small.

(Cover photo) A family dinner is usually without incident, but should food poisoning occur, the State Board of Health laboratories are ready to help find the cause of the disease and prevent its spread.

There were only 1500 reported cases of food poisoning and salmonellosis (a type of intestinal illness caused by a particular kind of bacteria) in the state last year. Considering the state's population of nearly six million, the number of meals served, the millions of persons engaged in handling and preparing foods — in the home, restaurants, community suppers and processing plants — 1500 is a relatively small figure. But this number of cases, if they involved most communicable diseases, would be considered an epidemic. However, the 1500 cases indicate the effectiveness of the work of the public health laboratories.

Most people never see the kitchen of the restaurant or hotel where they eat. Only a very few persons have had the privilege of being in a laboratory or knowing what goes on there. This issue of **Florida Health Notes** will try to tell you a little about the Quiet Service — the State Board of Health laboratories which are dedicated to helping to keep all of us well. Something will also be said about the work of the sanitarian and epidemiologist in food hygiene, the various bacteria which can make you sick, food infections and intoxications and how to prevent food poisoning.

Responsibilities and Cooperation

THE State Board of Health laboratory system was established in 1916 in one room, operated by a woman for the purpose of assisting physicians in diagnosing infectious diseases and testing drinking water. Now, as many as 1.4 million specimens a year are examined in the seven state and two county public health laboratories.

The laboratories have a number of responsibilities, foremost of which is the surveillance of food and continuing the original purpose of determining the cause of illness. In addition to routine diagnostic services for physicians, assistance is given to County Health Departments in the investigation of outbreaks of disease.

FLORIDA HEALTH NOTES

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Food poisoning outbreaks are primarily the concern of the County Health Departments, the Division of Sanitation, the Bureau of Preventable Diseases and the laboratory receiving the specimens.

There is much cooperation between the state and county governmental agencies to make sure that food is pure. County Health Department personnel are responsible for investigating, collecting and submitting proper specimens for testing. They are assisted by State Board of Health consultants during serious outbreaks of food poisoning. Adulteration or chemical contamination of food is the responsibility of the Florida Department of Agriculture, which also collects samples of shellfish and other foods from grocery stores and sends them to State Board of Health laboratories which test them for bacteriological purity. The Bureau of Sanitary Engineering of the State Board of Health approves shellfish waters (or puts polluted waters off limits) while the State Department of Conservation polices the area. However, oysters may be bootlegged and even you might pick some unknowingly from a polluted area. This can bring disease like typhoid, hepatitis or any of the enteric viruses and bacteria harbored in man's intestinal tract.

How Food Poisoning Can Start

WHAT exactly does the County Health Department and State Board of Health staff members do when a case of food poisoning arises? Let's take a look at a real life example.

One spring day recently, three student nurses at a Florida hospital were taken ill and diagnosed by physicians as having Shigellosis, a food-borne disease caused by the man-carried bacteria, *Shigella*. Because the hospital feared publicity, it did not inform the County Health Department and State Board of Health of these three cases of food poisoning, and took upon itself the efforts to find the cause of the infections.

The hospital submitted stool specimens from over 100 food service workers to the State Board of Health regional laboratory with no mention that these specimens were associated with a food poisoning outbreak suspected of being *Shigella*. When no disease is suspected, the laboratory routinely tests specimens from food service workers by a procedure which is intended to pick up typhoid bacteria. This was not the test the hospital was expecting and therefore no *Shigella* was found. When the results were re-



turned as "no typhoid bacteria indicated," the hospital administration and medical staff accepted these reports as meaning that there was no *Shigella* bacteria present and the source remained undetected.

Six weeks later, 17 student nurses and two x-ray technician students reported to the hospital emergency room with complaints of diarrhea. All were diagnosed as having Shigellosis and at this point the County Health Department and State Board of Health were notified. An epidemiologist was called in to head the investigation conducted by the County Health Department staff members.

Since student nurses were encouraged to report illnesses, and possibly because it meant exclusion from classes and ward duty, they were the first to report the infection. Minor illnesses, such as mild diarrhea, were largely ignored by the employees of the hospital because it would have meant loss of time on the job and less pay.

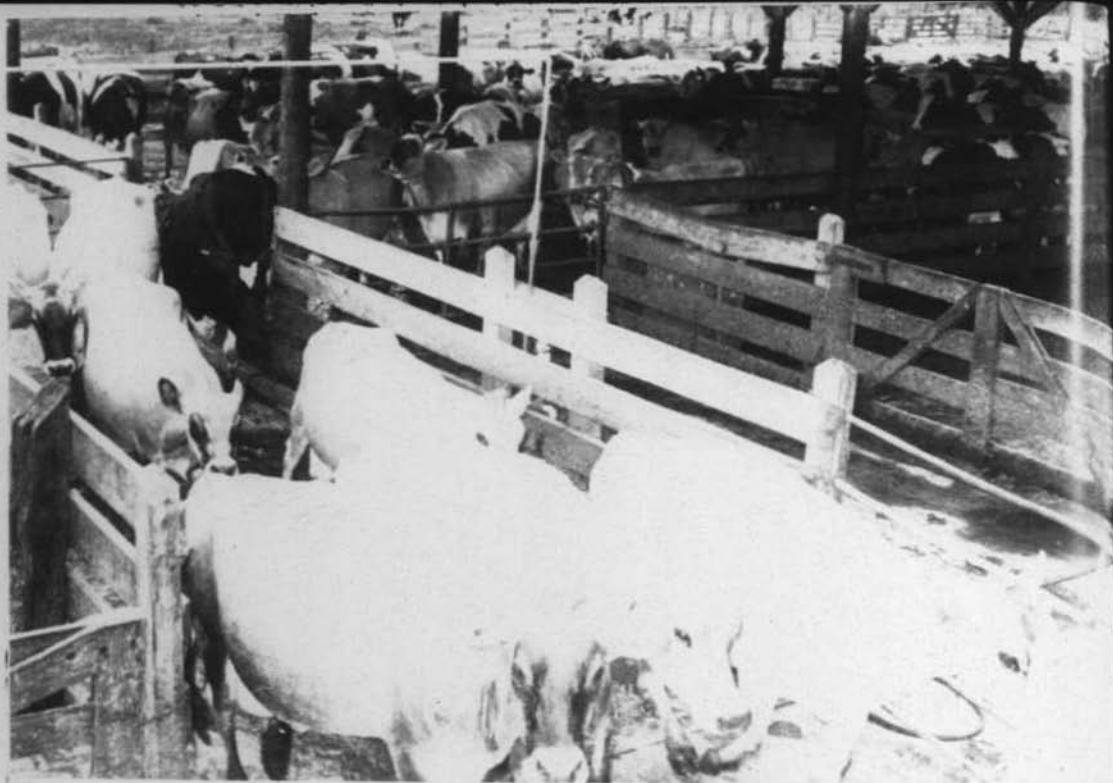
Questioning of the hospital family (student nurses, employees, housekeeping staff and non-nursing students) revealed the employees' cafeteria as the place where all of the sick persons had eaten. The testing of stool specimens by the regional laboratory



In order to prevent contaminated food from reaching the market, health agencies and agricultural departments keep close tabs on dairy food production through the inoculating and examining of dairy cows against disease, examining of dairy workers, supervising the processes of bottling, and handling of milk on the way to the food stores and homes.

showed that 77 persons had *Shigella* infection. The search for the common source of the infection revealed that the food for the hospital patients and staff was prepared in the same kitchen yet the patients suffered no attacks of *Shigella*. Somewhere between the kitchen and the serving line of the employees' cafeteria was the source of the infection.

Several violations of accepted food handling practices were noted: including "glass dipping" of ice, open containers of mayonnaise and other salad dressings in a self-service arrangement, houseflies in the food preparation area, inadequate handwashing



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facilities (fecal contamination of food was discovered twice during the investigation), miscellaneous traffic through the kitchens, and open garbage disposal containers.

In the final analysis, the employees' cafeteria was designated as the probable place where the infections took place and tuna and/or egg salad as the food involved — although samples of the food were not available at the time the investigation started.

In retrospect, the first three cases of *Shigella* should have been a signal of danger ahead for the hospital administration but, it failed to recognize the presence of the pathogenic bacteria in the hospital staff. If it had asked the regional laboratory for tests for *Shigella* on the first group of stool specimens, the latter epidemic may have been avoided. Also, the impulse of food service workers, as well as nurses and other employees, to work despite attacks of diarrhea had a tendency toward spreading the bacteria.

The Sanitarian

SOME restaurants seem to work on the theory that what you don't see can't hurt you. The County Health Department sanitarians work on the idea that a clean dining room is hardly any good if the kitchen is dirty — or if dirt is brought in from outside. Some restaurants have been found to keep screen doors open, letting in swarms of flies which have been breeding outside. Some restaurants have parking lots in the rear with entrance doors and passageways too close to exposed food.

The sanitarian checks

- the supply, storage and protection of foods;

Wilson T. Sowder, M.D., Florida's State Health Officer, says "It is obvious that for the protection of the health of Floridians and our visitors, the State Board of Health and County Health Departments must have the highest caliber and best trained personnel to make inspections of eating places and food-handling establishments to protect the health of the public and prevent food-borne diseases.

"To this end, the Board now hires sanitarians with at least a college degree. And provisions are made to send exceptional employees to recognized schools of public health for graduate training. Highly qualified personnel in every County Health Department receive continuing in-service training in all aspects of sanitation."

- all food handling practices ;
- the premises for mice, rats, ants, roaches and flies ;
- the floors for cleanliness ;
- all utensils to see that they are clean ;
- all pesticides or insecticides to see that they are not stored with food supplies ;
- the employees and their cleanliness — hands and clothing ;
- the restrooms to determine whether there is enough soap and towels ;
- the disposal of sewage ;
- the method of garbage disposal, water supply and cold storage ; and
- the hot water to see if it is hot enough and whether utensils and dishes are sanitized.

The sanitarian also takes swab specimens of glasses, dishes and utensils to test for the amount of bacteria which indicate how well the items have been sanitized.

County Health Departments often review plans for new restaurants in addition to checking plans for renovation. This can save restaurant owners a lot of worry, trouble and expense and most welcome this help.

Surveillance of Food Products

The Florida Legislature passed a law this year requiring that all milk sold to the public be pasteurized. Before this, some 10,000 to 15,000 gallons of raw milk were sold each day, leaving the drinkers subject to such diseases as bovine tuberculosis — to which man is very susceptible ; brucellosis (undulant fever) ; salmonellosis ; various streptococcal infections, such as strep throat ; and leptospirosis, a bacterial disease. But due to constant surveillance by health agencies, the Florida and the U. S. Departments of Agriculture, a dairy is rarely so contaminated that it has to be closed.

Now through required pasteurization, these possibilities are removed but there is still the chance that milk may be infected by man. Here is where the laboratory's surveillance and testing play a most important part in detecting the infectious diseases and isolating their causes.

From each of the approximately 550 dairies in Florida, the State Board of Health and County Health Department sanitarians

pick up one or more samples every month of each product the dairies process or manufacture. These samples are kept under constant refrigeration from the dairy to the laboratory, and may reach only a maximum of 50 degrees Fahrenheit in the truck. Over 150,000 dairy samples are tested annually.

In the laboratory, the product is registered and a two-plate bacteriological count is made. This means that a portion of the product is diluted 1-to-100 and, in case a great deal of bacteria is found, another portion is diluted 1-to-1000. These samples are placed on a petri dish containing agar, a gelatin product, and put into an incubator where the bacteria are allowed to grow.

After 48 hours, the petri dishes are then taken out of the incubator for a bacteria count. If no bacteria are found, the milk (if that is what is being examined) is suspected of having something added to it to kill the bacteria. The laboratory technician expects to find less than 3000 bacteria per milliliter. (A milliliter is 1/1000 of a liter and a liter is approximately a quart.) If the count runs over 30,000, the sanitarian looks for unsatisfactory conditions in milk processing.

In testing solid foods other than milk, such as custard pie or a sandwich, the specimen is placed in a blender with sterile water and converted into a liquid. A two-plate count is run but this time different types of bacteria are looked for and a different growth medium — food in which each type of bacteria will grow — is used. The staphylococcus count, a test for an organism which does not cause illness unless there is an excessive number of bacteria per milliliter present, indicates the food was contaminated

Classes for Food Service Workers

NEARLY 50,000 Florida food service workers have been taught the fine points of keeping food clean, fresh and attractive in County Health Department programs. Students are given general knowledge of how bacteria live, grow and cause disease. They are shown how food can become contaminated by microscopic bacteria — or by such things as rats, insects or just plain dirt. The keeping of utensils and hands clean is stressed. The students are also taught the importance of good personal hygiene.



The County Health Department sanitarian takes a swab test of a glass in a restaurant. This swab will be sent to a State Board of Health laboratory where it will be tested for bacteria to see how well the glassware has been sanitized.

by persons who had passed on the bacteria through infected cuts, drippy noses or dirty hands.

A coliform count (another test for bacteria) indicates contamination from organisms found in the intestines of man or animal and a large number may mean dirty ingredients, hands or equipment or too little refrigeration.

The tests will give evidence of three things:

- how clean and pure was the food;
- the condition under which it was produced; and
- the hygiene of the workers.

If there had been a food-poisoning epidemic and sanitarians were fortunate enough to obtain remnants of the suspected foods, they are put through the same tests as the sandwich or pie taken from a food-processing plant for periodic examinations. If the sanitarians have no food available for testing, they must depend upon analysis of stool or vomitus specimens from the victims.

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A sanitarian (left) takes a sample of foods from a cooking pot on a restaurant stove. This sample will be sent to the laboratories to be tested for bacteria. Another sanitarian (opposite page) checks the cleanliness of a restaurant's deep fat fryer and other equipment.

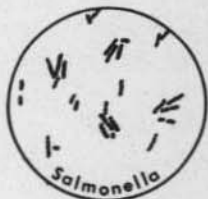
Taken during the acute stage of the disease, these specimens must be put on a culture medium as quickly as possible because certain forms of bacteria, such as *Shigella*, may decrease rapidly in number. Stool and urine specimens must be collected in a special bottle containing a preservative solution to protect the bacteria during shipment, and while they are being prepared for culture and microscopic examination.

The initial period during which the pathogenic bacteria are incubated (grow) takes 16 to 18 hours. Three to seven days are required to complete the tests, depending on which bacterium is found. Numerous media have been developed for isolation and identification, and more recently complex media have been developed which are highly selective, greatly improving chances for successful tests.

No single culture medium can be used for all the different types of disease-causing bacteria which may be found; and the technicians must be constantly alert because organisms do not necessarily keep their typical shape. For example, *Shigella* and *Salmonella* usually produce typical growth colonies (large numbers of bacteria growing on another medium) but their appearances may be altered when grown close to other organisms. Therefore, the greatest care must be taken in sampling colonies if pure cultures are to be obtained.

You may be interested — or perhaps alarmed — that acute Shigella can kill in two or three days if left untreated. Usually Salmonella may make you slightly ill for a few days, or it may develop into a long-range affair. People who have lowered resistance because of diabetes, hardening of the arteries, other diseases, or who are taking cortisone, may develop into carriers of these bacteria.

Four Organisms Which Will Make You Sick



Salmonella, one of the most common causes of food poisoning, is a rod-shaped bacterium. It is carried largely by domestic animals, chiefly poultry and pigs, but humans carry it also. It is transmitted by contamination from feces and contact with uncooked meats and poultry. Over 800 different types are known. **PREVENTION:** Thorough cooking of foods and keeping hot foods hot and cold foods cold; good personal hygiene; proper sewage treatment and purification of water supply.





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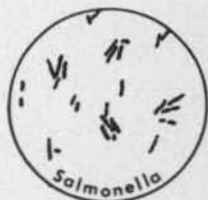
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Shigella is also a rod-shaped bacterium which is sometimes found in the military under field conditions and in institutions housing many people in close conditions. Some 37 types of the bacteria are recognized. Man is the reservoir and the bacteria are spread by contamination from infected persons and failure to wash hands after using the toilet. **PREVENTION:** Thorough cooking of foods, good personal hygiene, fly control, proper sewage treatment and purification of water supply.



Staphylococcus is a spherical organism which appears in bunches (like grapes). In growing, these organisms produce a potent toxin (poison) which when consumed will result in severe illness. Man is the prime source and a person with a draining sinus or open, infected wound is to be suspected. Personal contact spreads it — physically touching or airborne oral or nasal discharge. **PREVENTION:** Immaculate personal hygiene; avoid common use of toilet articles; stay away from coughers and sneezers.



Clostridium botulinum is the cause of botulism and, like staphylococcus, produces a potent toxin which when ingested causes severe illness and death. The organism is rod-shaped with squared-off ends. The illness is characterized by weakness, dizziness, headache, constipation and paralysis of the nerves. Hoarseness is often the first sign. The reservoir is soil and intestinal tract of animals, including fish. In chickens, the bacterium causes a paralytic infection called "limberneck." In contrast to other bac-

teria, **C. botulinum** can withstand boiling temperatures but the toxin, which makes one sick, is easily killed. Contaminated foods are the immediate cause of illness. **PREVENTION:** Proper canning procedures, including home and industrial processing; boiling home-canned vegetables and cooking home-canned meats at least 15 minutes with thorough stirring before serving.

Food Poisoning

Of all places to contract food poisoning a wake would be the most unlikely but State Board of Health's records show that this happened in a North Florida city.

CASE HISTORY:

About 60 persons attending this wake ate the suspected foods of cake, vegetable stew, macaroni and tuna, pork, green peas, chicken and rice, and macaroni and cheese. Eleven persons became ill within 30 minutes to four hours after eating; three of them were seriously ill enough to be hospitalized. Nine persons had handled the food and laboratory tests showed that the organism *staphylococcus* was the cause. It was determined that someone with a staph infection, other than the food handlers, was the source of infection. The food had been prepared in private homes and through the course of moving, the bacteria apparently had multiplied due to lack of refrigeration and protection.

CASE HISTORY:

Another type of food poisoning was discovered following an investigation of a poorly operated kitchen of a Gulf coast hotel. Of 200 persons eating at the hotel at one time, 34 became ill. Sanitarians found that a meat slicer was cleaned with a rag from a bucket of soapy water; the same rag and water were used to clean a table top and other equipment. Food carts were cleaned weekly instead of daily and not steam-cleaned as required. The walk-in refrigerator's drainage was incorrect. Meat was cooked and allowed to cool by standing in pans on a table before being refrigerated; it was then reheated and placed on food-warmers which were disconnected and open all the time the food was in them. The organism found was *Clostridium*, a bacterium which has many species and is found in battle wounds, the soil, sewage, meats, vegetables and fruits not properly sanitized and appendices and intestines of men and animals.

A sanitarian investigating this outbreak asked one kitchen employee for a specimen of his stool. The man delivered this and when asked by the sanitarian if he had washed his hands afterwards, replied, "No! They weren't dirty!" Examination revealed both hands were contaminated.

Proving Food Poisoning

WHEN food poisoning is suspected, how does the laboratory technician go about proving or disproving it? The process is complicated and takes skilled hands and eyes and shrewd analytical faculties.

Salmonella and Shigella organisms frequently enter the intestinal tract and may be recovered in the laboratory from stool cultures. One of the problems is distinguishing other species of bacteria which are present and which look like the offending species.

Suspicious organisms are isolated in pure culture and then subjected to special identification procedures:

- A heavy suspension of a stool specimen is smeared over the surface of an agar which promotes growth. Several kinds of agar are used because if only one is used, the results might fail.

- The plate is incubated for 18 to 24 hours and then inspected for the presence of suspicious colonies. Any misleading organisms must be screened out as early as possible so as not to confuse or delay the prompt findings of any organisms being sought.

- Another screening procedure results in pure cultures of the suspicious organisms for further study and indicates the technician's success in avoiding unsought colonies. At the same time some hint may be given of the nature of the suspicious organisms.

- Selected isolated colonies are subcultured in test tubes and inspected after incubation. The tubes are chemically treated but even now Salmonella and Shigella may not be positively identified.

- Subinoculations of the growth from each selected tube are made into other tubes. These may show results in two to four hours but any negative tube is returned to the incubator for additional incubation. Delayed reaction may be of some assistance in identification.

- The remaining cultures, whose reactions were consistent with Salmonella or Shigella organisms and which were negative in the tubes, are subjected to a series of biochemical and serological tests for identification.

Few hospitals and private laboratories are equipped for complete diagnostic services. It is more efficient for them to confine themselves to providing prompt and accurate screening of suspi-



A laboratory technician (above) picks a colony of suspected bacteria from a petri dish; (right) test tubes of isolated colonies are placed in an incubator where the bacteria, if present, will multiply.



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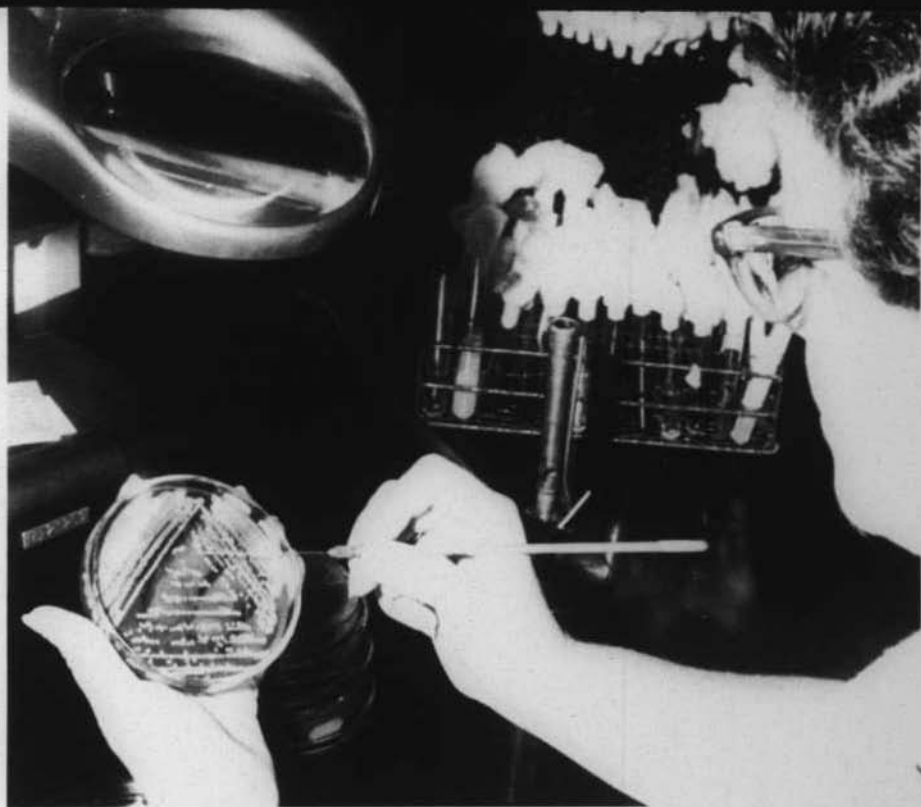
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ous organisms and rely upon the State Board of Health laboratories for positive identification. This is particularly desirable since the Board of Health has the legal responsibility in the matter of infectious disease control.

Food Infections and Intoxications

THERE are eight major categories of food-borne illnesses and 40 specific diseases which may be transmitted if foods are not prepared and handled according to the State Sanitary Code. If you become ill from any of these diseases, you will experience one or more of these symptoms: diarrhea, fever, nausea, abdominal pain, dizziness. Laboratory tests are the usual method of diagnosing which type of pathogenic organism is causing the illness. Some of the diseases, the foods involved and prevention are:

Illness	Foods Usually Involved	Prevention
BACTERIAL FOOD INFECTIONS		
Bacillary dysentery	Moist prepared foods; milk	Strict personal cleanliness; refrigerate moist foods
Undulant fever	Raw contaminated milk products	Pasteurization of milk
Diphtheria	Milk contaminated from human source	Pasteurization of milk
Streptococcal food infection	Food contaminated by respiratory discharge of carrier	Cook food thoroughly; store moist foods under refrigeration
Typhoid fever	Milk, shellfish, other foods contaminated with feces of human cases or carriers	Pasteurize dairy products; use certified shellfish, chlorinate water; eliminate flies

Illness**Foods Usually
Involved****Prevention****VIRAL FOOD INFECTIONS**

Hepatitis	Contaminated shellfish or food contaminated by a person with the hepatitis virus	Use shellfish from approved sources; cook foods thoroughly; exclude persons with disease from handling foods
Acute viral gastroenteritis	Moist prepared foods	Personal sanitation and hygiene; serve foods immediately or hold hot

FOOD INTOXICATIONS

Botulism	Home-processed foods; contaminated canned foods	Cook foods thoroughly; boil 15 minutes, stir thoroughly
Staphylococcal food poisoning	Cooked meats; cream-filled pastries and other dairy products; bread puddings; potato salad; warmed-over foods	Exclude from food handling persons with nasal discharge or skin infection; keep hot foods hot and cold foods cold

PARASITIC INFECTIONS

Amoebic dysentery	Water contaminated with sewage; moist food contaminated with human feces	Personal sanitation; protect water supplies
Beef or pork tapeworm	Insufficiently cooked beef or pork containing live larvae	Use approved meats only

Illness	Foods Usually Involved	Prevention
CHEMICALS		
Arsenic lead poisoning	Insecticide-contaminated foods	Proper storage of poisons
Cyanide poisoning	Food contaminated with silver polish containing cyanide	Do not use such polish or thoroughly wash polish from items
Copper poisoning	Any acid foods which leaches copper from utensil surface	Prevent acid foods from coming in contact with copper
Zinc poisoning	Food leaching from galvanized ware	Do not cook in such ware

POISONOUS PLANTS AND ANIMALS

Barracuda	Meat of the fish	Do not eat
Shellfish poisoning	Mussels	Florida's fresh-water mussels are all poisonous
Mushroom poisoning	Poisonous mushrooms	Use only certified non-poisonous varieties
Rhubarb leaf poisoning	Rhubarb leaves	Eat stalks only
Snakeroot poisoning	Milk from cows pastured on snake-root	Keep cows away from plants
Solanine poisoning	Green or sun-burned potatoes; wild celery	Do not use sprouts or peelings from such potatoes; don't eat the celery

PHYSICAL

Radiation poisoning	Any food exposed to contamination from radioactive material	Remove source; constantly monitor suspected foods
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You, Your Kitchen and the Law

FLORIDA'S subtropical climate creates a condition which can contribute more readily to food poisoning than areas in more temperate regions. Food which could be left unrefrigerated in normally cool weather will spoil more quickly in Florida's warm climate.

Community suppers can lead to trouble and often do. They are frequently prepared in private kitchens where children and pets have free range. With the exception of a dog guide, which may accompany its master into a food service establishment, Florida law prohibits live birds and animals from being in restaurants, in vehicles used for transporting foods, or in facilities used to conduct food service operations. These include any place where food or drink is prepared and served for the public — whether a charge is made or not. The regulations do not cover private homes but many cases of food poisoning develop in private kitchens because of unsanitary conditions.

The Florida Sanitary Code requires cold foods served to the public to be kept at 40 degrees Fahrenheit or below, and hot foods be kept at 150 degrees or above — except during preparation and service. This same rule should apply in the home.

Potentially hazardous foods, such as ham, chicken, egg, potato and seafood salads "shall be prepared with a minimal manual contact," according to the Florida Sanitary Code. In other words, keep your hands out if at all possible; keep them thoroughly washed; and NEVER use your hands for mixing salads if there is a cut or rash on them.

Raw, unprocessed fruits and vegetables should be thoroughly washed.

Frozen foods should be kept at 0 degrees Fahrenheit and thawed at 40 degrees or below under cold water, or quick-thawed as part of the cooking process.

Illness	Foods Usually Involved	Prevention
CHEMICALS		
Arsenic lead poisoning	Insecticide-contaminated foods	Proper storage of poisons
Cyanide poisoning	Food contaminated with silver polish containing cyanide	Do not use such polish or thoroughly wash polish from items
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Pork products should be cooked to 150 degrees; stuffings, stuffed meats, poultry should be cooked to at least 165 degrees with no interruption of the cooking process. The stuffing of natural crab shells is prohibited.

Employees of any food service establishment are prohibited from using tobacco in any form while engaged in handling food or equipment; and he or she must thoroughly wash his or her hands before resuming work after smoking.

This Information Can Help You

YOU have read about the leading kinds of bacteria which can make you ill through food poisoning. We have told you what they look like; where they come from; how they are carried from a source of infection or contamination to an innocent person; and how they affect you.

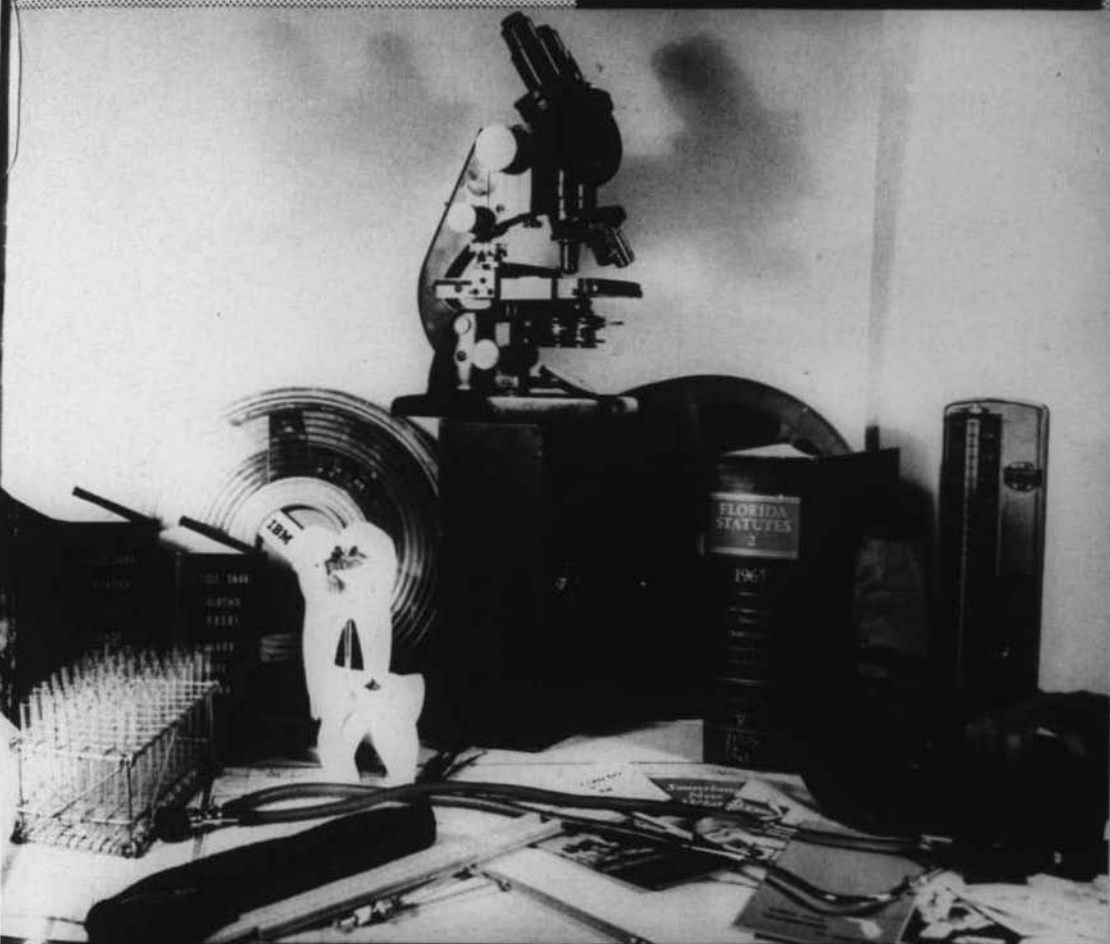
We have said that there are some principles that can help prevent such illness:

- strict personal hygiene, such as washing your hands after using the toilet and before handling foods;
- cooking foods thoroughly; and
- storing foods at proper temperature. A good rule of thumb is to keep foods either cold or hot.

The State Board of Health laboratories are open 365 days a year, keeping watch on foods you may eat and trying to discover what may have made you ill. We have told you how technicians go about their exacting work.

Let us hope you never have food poisoning. But suppose you do. If it's minor, you'll probably pay little attention to it. But if you're really sick, you should see your family physician. If you were at a picnic yesterday, or a group supper last evening, tell him what foods you ate and who else was at the gathering. They also may become ill and this will help trace the cause. If you have not eaten out, the food in your own kitchen may have been contaminated. This is no time to be ashamed. It is important to you and your physician that you get well as quickly as possible. Only by helping him discover the cause can this happen.

Remember, failure to detect and report food poisoning could cost you your life.




FLORIDA STATE LIBRARY

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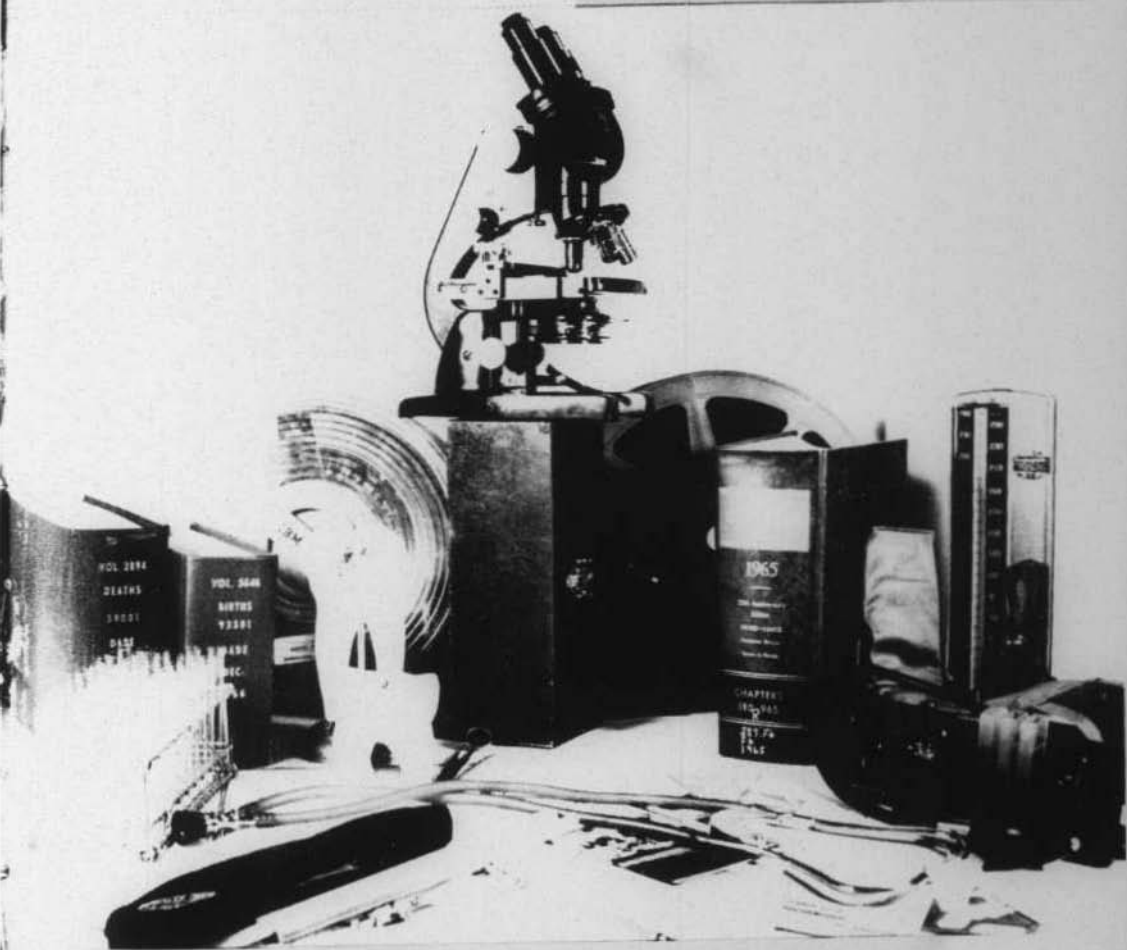
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FLORIDA HEALTH NOTES



VOLUME 59 — NO. 12

DECEMBER 1967

Careers...

in PUBLIC HEALTH

FLORIDA STATE LIBRARY.

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in PUBLIC HEALTH

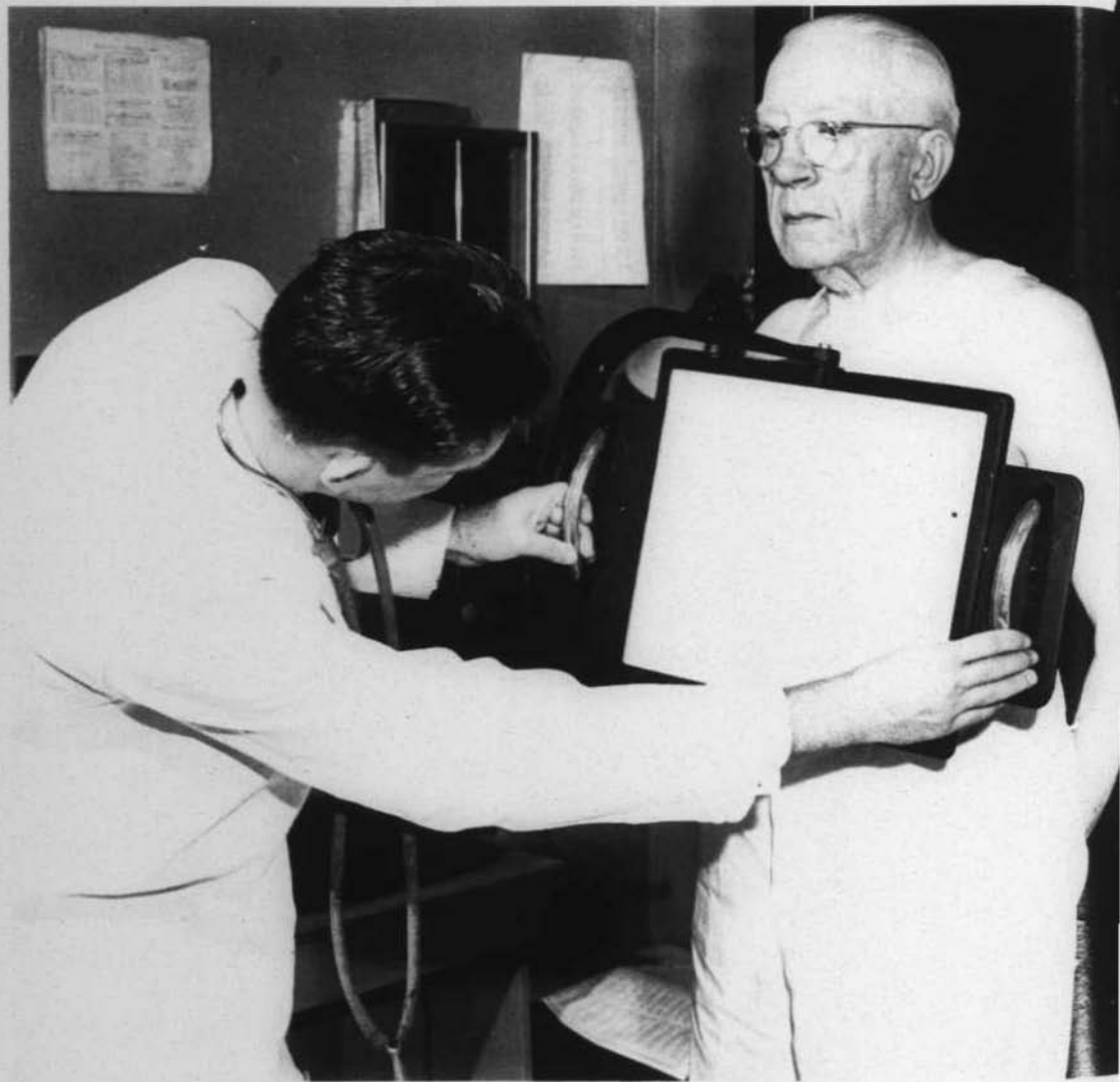
When a man finds himself without food or shelter, he takes things into his own hands and does something about it. But if disease strikes, he must turn elsewhere for help. In the past he has turned to the supernatural, to the priest, or to the medicine man. Today, man turns to the physician and the trained people who assist him.

By tradition and because of lengthy and comprehensive scientific training and medical orientation, the physician is the key person on this health team. But he has many partners and his effectiveness depends on other members of the team. Public health, which deals with the health of the community as contrasted to individual health, also requires the services of dentists, health educators, laboratory workers, nurses, office workers, sanitarians, sanitary engineers, secretaries and x-ray technicians — just to name a few. These people are helping their fellowman to better health — which is physical good health, freedom of disease and a “sense of well-being.”

Choosing any career as your lifetime vocation is an important decision. Selecting a public health career is a rewarding decision because working for health is more than just a job. It is a point of view and a way of looking at life — including your own life and the lives of other people you meet, serve and work with every day.

Public health needs all kinds of people with all kinds of skills. The public health team has a place

(Cover photo) Microscope, stethoscope, blood pressure cuff, tooth model, test tubes, movie film, computer tape, law and vital statistics books are just a few of the tools that represent the wide range of careers in public health.



The clinical specialist's is one of the many fields in public health for medical practitioners. Other areas of work include administration, research, epidemiology and planning.

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for those who enjoy working with people and have a special gift of sympathy and understanding;

for those who like to work alone in research and laboratories;

for those who are efficient managers and administrators;

for those who are good at typing and clerical skills;

for those who like to work with their hands, run machines and operate equipment;

for those who have an aptitude for mathematics and science;

for those who like to teach, write, take pictures and do art work;

for those who are interested in food and housekeeping; and especially

for those who have a desire to help other people.

If you like to do any of these things, public health in Florida has a place for you. There is always a need for well-qualified professional people to fill positions in various fields in public health. There is also a need for skilled nonprofessional people, such as clerks, home health aides, laboratory technicians, secretaries, clerk-typists and laborers.

This issue of **Florida Health Notes** has a two-fold purpose. It will

*tell you who are looking for a purpose in life about the rewards of a health career and what are the qualifications for the various disciplines; and

*tell you who have found your position or have already established a career about the variety of workers found in the public health field in Florida.

FLORIDA HEALTH NOTES

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VOLUME 59—NO. 12

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Health Career Ahead?

People in the health field often think of themselves as having a career rather than a job, and any student who is considering what to do with his life will find that from the moment he makes a decision to enter the health field he will have a feeling of pride in his choice. Although no two health careers are alike, they have much in common, purpose and outlook for the future. But still the health field is so diversified that educational requirements vary in the different disciplines.

There are three main steps in planning a career:

Information — Seek published information from professional organizations, colleges, universities, schools and voluntary and governmental health agencies. Find out the possibilities of getting a scholarship or some other form of student assistance if you need it. Take the opportunity to talk to people in the field in which you are interested.

Counseling — Talk to an experienced advisor, either at school or the state employment service. Personnel in the State Board of Health and County Health Departments will be happy to counsel with you about careers in public health. If possible take aptitude tests which will show what work you are best suited for. Seek advice of people who are interested in the health field and par-

A physician and public health nurse examine an infant at a well-baby clinic. Pediatrics is one important area of public health work for physicians.



ticularly of people who are leaders in the profession in which you are interested. Take into consideration the cost of the necessary education and possibilities of graduate training, and plan accordingly.

Initiative — Don't rush into an all-or-nothing career or one that is less adaptable to different situations. Most of the basic skills needed in the health field can be applied to many occupations. The student may have to take into account changing circumstances, such as finances, scholastic standings and personal or family matters. An adaptable occupation has real advantages. Young men who need to consider military obligations should plan to use, through the various Armed Forces' programs, this time for furthering their education and training rather than considering the period as an interruption of their career. The Armed Forces need and do develop and utilize nearly every kind of health skill.

CAREERS REQUIRING HIGHER EDUCATION

There are a number of public health careers which require a baccalaureate degree or higher. Some professions, such as dentists, engineers, physicians and social scientists, demand many years of additional schooling and training beyond the usual four years. In some disciplines a master's degree in public health, sanitary engineering, biological or physical sciences is becoming more and more a prerequisite for employment or advancement. Following are qualifications and duties for 37 classifications in the public health field which require additional education beyond high school.

THE PHYSICIAN

Education for a physician demands four years of premedical school with an emphasis on the sciences, four or more years of education and graduation from an accredited medical school, internship, and sometimes a period as a resident physician in a hospital. For the public health field in Florida, the physician may also be certified by the American Board of Preventive Medicine and he must be eligible to be licensed as a physician by the Florida State Board of Medical Examiners.

*The **Administrator** (including the director of a County Health Department) is a physician who is a recognized and experienced specialist in public health. The director looks to his professional staff to take responsibilities for the public health services, but he is the one who directs the various programs, makes policy decisions and is answerable to the governmental unit under which the agency operates.

*The **Specialist** in public health administration heads special disease control programs and may direct one of the services rendered by the modern health department.

*The **Researcher** is a physician who teams up with the social scientist, the physiologist, the psychologist, the biologist, the chemist and many others to carry on research. In Florida, research is being carried on in such fields as arthropod-borne diseases, pesticides, infant and maternal care and retardation.

*The **Clinical Specialist** can go into some 20 fields, including obstetrics and gynecology (management of childbirth and women's diseases), pediatrics (medical care of children) and ophthalmology (treatment of the eye and its diseases).

*The **Epidemiologist** is a physician who works in the field of disease detection and prevention. He combines scientific facts with everyday situations to seek out the causes of communicable disease epidemics and promotes preventive measures.

*The **Program Planner** is a physician who is concerned with the planning of health programs and who evaluates the results as a basis for improving the services of the health department. His goal is to bring about more effective public health programs and productive use of time, space, personnel and equipment.

NURSING AND PARAMEDICAL

There are few areas of endeavor that offer more satisfaction than public health nursing, physical therapy or health field work. These disciplines are ones which work closely with the people of Florida. Because of the shortage of professional nurses, the State Board of Health and County Health Departments maintain a constant program of recruitment.

manities and biological and physical sciences. **Duties:** works with physician and nurse, members of the health team, to help patients overcome their disabilities through treatment by physical and medical means (massage, exercise, water, light, heat and electricity).

***Health Field Worker** — requires a four-year college degree. **Duties:** carries out field investigations and educational work in the control and prevention of communicable diseases by interviewing infected persons, tracing source of infections and informing infected persons of the requirements of disease control programs and the facilities for treatment.

ENVIRONMENTAL HEALTH

At one time, back in the early days, there was little to pollute either the water or air, and certainly, in those days, no one anticipated a time when the disposing of radioactive wastes would challenge the best minds of the public health field. Today the growth of population, the many kinds of waste which are the by-products of our homes, businesses, farms and industries threaten to overwhelm us. This work calls for sanitary engineers, sanitarians, entomologists, industrial hygienists and air pollution specialists.

***Sanitary Engineer** — requires a college degree in engineering; civil, chemical and sanitary are the most common degrees; a master's degree in sanitary engineering or public health is helpful for advancement. **Duties:** include responsibilities for programs which ensure the provision of safe drinking water sources, the satisfactory operation of water supply systems and water purification processes, the control of recreational and shellfish waters, the design and operation of sewage collection and treatment facilities, the control of air pollution and many important activities.

***Sanitarian** — since 1960 has required a degree from a four-year college with emphasis on biological, chemical, physical and health sciences. **Duties:** Primary goal is to find and remove health hazards in order to make the physical environment safe for everyone; undertakes various types of field work, including inspection of food service and processing establishments, schools, dairies, trailer parks; investigates public health nuisance complaints; and does rabies control work. Specialization may be undertaken in many



A public health nurse, assisted by a gray lady volunteer, takes the blood pressure of a patient in a County Health Department clinic. The clinic is just one activity of the public health nurse.

***Public Health Nurse** — There are two categories in nursing education: the hospital or independent school which offers a diploma program and the college or university which gives a baccalaureate degree in four years. **Duties:** As part of the public health team, the nurse is concerned not only with the sick but also with the prevention of illness. She gives nursing service in the home, school, office and industry. In the County Health Department clinics, she gives immunizations, assists the physician with examinations, does blood tests, hearing and vision tests, and gives injections as ordered by the physician. A large and very important portion of the nurse's time is given in educating her patients in the ways of better health.

***Physical Therapist** — Some colleges give a four-year course leading to a bachelor of science degree; other schools have a "certificate program" for those who have completed all or most of their undergraduate work, provided it has included subjects in the hu-

manities and biological and physical sciences. **Duties:** works with physician and nurse, members of the health team, to help patients overcome their disabilities through treatment by physical and medical means (massage, exercise, water, light, heat and electricity).

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***Draftsman** — A college degree is not a prerequisite for this position but college education in the field of pre-engineering training, in mechanical drawing, plus experience will aid greatly toward advancement. **Duties:** works with sanitary engineers on plans for sewage treatment and water supply facilities; does illustrations for publications, posters, etc.

LABORATORIES

Public health has need of more and more scientists who work closely with all disciplines to prevent and control disease. The focal points for work in the health sciences are the regional laboratories in Miami, Orlando, Tampa, Pensacola, Tallahassee and West Palm Beach; the central laboratory in Jacksonville; and the two laboratories in Brevard and Pinellas County Health Departments. Studies which help with the diagnosis and treatment of disease are carried on in these laboratories. Tests are also made of food, water, sewage and industrial waste, milk and dairy products, and radiological specimens. Field trips are made for investigations and inspections.

Employment is exceptionally good for well-qualified young people. The outstanding college graduate who has a bachelor's degree with a major in chemistry, biology, bacteriology, physiology or physics will find the work he wants in the public health laboratory.

***Biologist** — requires a college degree in biology or zoology; graduate study and laboratory experience will help toward advance-



Sanitarians check the chlorine content of a motel swimming pool. This is just one of the many activities they carry on to find and remove environmental health hazards.



Environmental health is partly the responsibility of the sanitary engineer. This includes the design and operation of sewage collection and treatment facilities.

specific areas, such as food sanitation, pollution control or swimming pools.

***Entomologist** — requires a college degree in one of the biological sciences; a master's degree or doctor of philosophy with major courses in entomology may lead to advancement. **Duties:** undertakes field and laboratory work in the control of insects and/or rodents that transmit disease to man or prey on crops. He must keep himself informed on all techniques and methods available as precautions in the use of insecticides and pesticides.

***Physicist** — requires a college degree in one of the physical or biological sciences. **Duties:** carries on field and laboratory work in the investigation and control of ionizing radiation and other physical phenomena potentially hazardous to man.

***Industrial Hygienist** — requires a college degree with a major in chemical engineering or one of the physical sciences. **Duties:** to recognize industrial hazards, such as toxic gases, dust, vapors and fumes, noise or lighting conditions; to evaluate the magnitude of the hazards and to prescribe ways of eliminating or controlling them.



The laboratory has many types of specializations for the college-trained person. There are also many positions available for laboratory technicians who do not have this type of education.

ment. **Duties:** scientific and field work in stream biology and the study of plants and animals and the diseases these forms of life can transmit to humans.

***Chemist** — a college degree in chemistry or a baccalaureate degree with at least 20 semester hours of chemistry; a master's degree in chemistry or chemical engineering is helpful for advancement. **Duties:** exacting laboratory work in chemical testing and analyses in such fields as toxicology, pesticides, industrial hygiene, air pollution control, industrial wastes and sewage treatment and public water supply.

***Microbiologist** — a college degree with a major in one of the biological sciences; advanced studies in microbiology or public health will help toward advancement. **Duties:** perform exacting and skilled laboratory work in the carrying out of a wide variety of examinations and tests which are an integral and essential part of the community health protection services administered by the State Board of Health and County Health Departments.

*Other specialties in the public health laboratory which are related to the main classifications are:

- bacteriology — the study of the growth and spread of bacteria;
- parasitology — the study of parasites;
- virology — the study of viruses and viral diseases;



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serology — the study of serums and their actions;
hematology — the examination and testing of blood specimens
and interpretation of the results to aid in diagnosis
and treatment of certain diseases;
mycology — a specialization in fungi; and
toxicology — the study of poisons

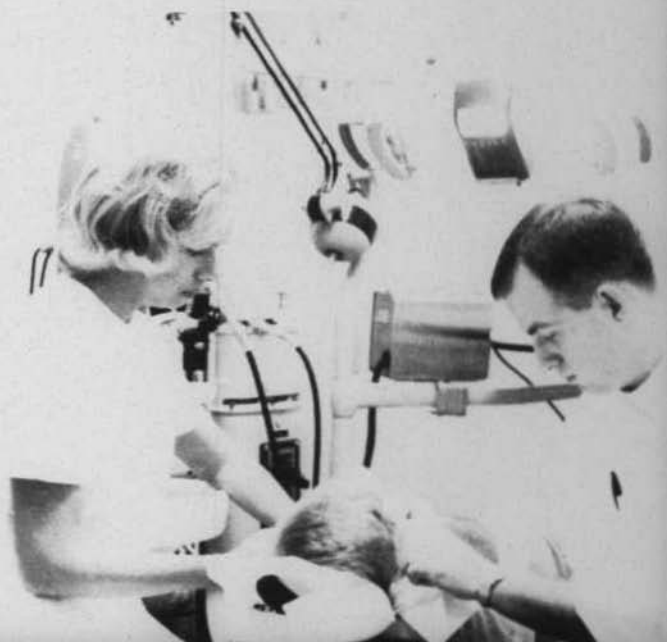
DENTAL HEALTH

Dental health is a field of life-time opportunity for the qualified professional person. The demands for dentists far exceed the supply of capable trained personnel. Whereas the dentist in private practice works with the individual, the public health dentist's interest extends beyond the individual to include the total dental health of the community. He stresses the importance of preventive dental health and all services which maintain it.

***Dentist** — a college degree with emphasis on the sciences; a doctorate of dental surgery or dental medicine; and licensed to practice in Florida. **Duties:** perform professional work in dental and oral surgical services and the full range of dental duties in examination, treatment and complete dental care of schoolchildren and certified indigent children and adults.

***Dental Hygienist** — graduation from an approved school of dental hygiene and certified by the Florida Board of Dental Examiners. **Duties:** technical dental hygienic work not requiring the services of a professional dentist, involving examination and oral prophylaxis and including promotion of dental health education in schools.

The public health dentist and dental hygienist check the teeth of schoolchildren and give dental care to indigent cases. They also promote dental education for the entire community.



HEALTH EDUCATION

Sometimes people suffer from illnesses that could be prevented or fail to behave in a way to promote good health because they don't know or understand the facts. They frequently fail to make the most of health progress because they have not been able to keep up with the bewildering pace of scientific change. It is the job of the health educator, along with other health workers, to translate these scientific advances into everyday, usable form and to help people help themselves — individually or in groups.

***Health Educator** — college degree in education with specialization in health, science or sanitary science. **Duties:** information and liaison work with community groups, stimulating people in the community to recognize health problems of which they may not be aware and to work for their solution. Assists other public health workers in planning educational programs for the State Board of Health and County Health Departments. Works with civic groups, voluntary health agencies, schools, etc.

***School Health Coordinator** — a college degree and experience as a classroom teacher and/or school administrator; a master's degree or doctorate in education may be helpful for promotions.

The health educator tries to stimulate people in the community to recognize health problems and to work for their solution.



Duties: consults with governmental, educational and community groups in planning health programs for schools and introducing these programs into the state's school system.

***Information Specialist** — a college degree in journalism and experience in newspaper writing, publicity or editing; a master's degree in journalism, English, public relations or speech may be helpful for advancement. **Duties:** specialization in writing, editing and publishing information about health and carrying on a public information program in behalf of the State Board of Health and County Health Departments.

***Medical Librarian** — a college degree in library science. **Duties:** responsible for the planning and managing of a library involving the selecting, classifying, cataloging, shelving and circulating of library books and materials maintained for research and public information.

VITAL STATISTICS, NONMEDICAL AND ADMINISTRATIVE

There are a number of people involved in public health who are not scientists, physicians, educators or dentists but who are important because they keep records, handle finances, audit books, analyze programs and assist the State Health Officer and directors of the County Health Departments with the administration of health services.

***Statistician** — a degree from a four-year college with major emphasis on statistics, mathematics or either biological or physical science, providing there are three or more semester hours of statistics; a master's degree in statistics or mathematics is helpful for advancement. **Duties:** technical research and statistical work in the compilation, analyzing and interpreting of public health data in relation to health and disease.

***Accountant** — a college degree with at least 12 semester hours in accounting; a master's degree or the possession of a Certified Public Accountant's license is helpful for advancement. **Duties:** carry on the cost accounting system of the State Board of Health

OTHER SPECIALISTS IN PUBLIC HEALTH

The public health field needs the services of a wide range of professional people who are also found in other areas of activity or private practice. Some of these specialists, such as veterinarians and nutritionists, have been in the public health field for many years; the attorney and social scientists are virtually newcomers and many people do not think of them as public health workers.

***Veterinarian** — graduation from a school of veterinary medicine; licensed or eligible for licensing by the Florida State Board of Veterinary Examiners. **Duties:** responsible for control work in diseases transmissible from animals to man; serve as technical consultant to local health officers on veterinary problems relating to public health or as animal pathologist in the laboratory diagnosis of biological specimens.

***Nutritionist** — a college degree in home economics and a dietetic internship; a master's degree in nutrition or public health is helpful for advancement. **Duties:** responsible for promoting educational programs in nutrition, helping County Health Departments to develop nutrition programs, assisting in staff training, planning publicity and organizing and developing community nutrition programs. They also provide nutrition instructions to individuals on special diets and persons with nutrition problems.

The public health veterinarian is responsible for control work in diseases which are transmissible from animals to man.





The statistician compiles, analyzes, interprets and translates data into meaningful information which will help fight disease.

and County Health Departments which shows the exact cost of programs and the preparation of the projected budget by which all future expenditures are controlled.

***Auditor** — a college degree in accounting and certification by the Florida State Board of Accountancy. **Duties:** responsible for the examining of accounting records and financial statements of the State Board of Health and County Health Departments.

***Health Program Specialist** — a master's degree in public health or hospital administration and four to six years experience with increasing responsibilities in public health programs, including two to three years in an administrative capacity. **Duties:** responsible for planning, developing and evaluating health programs for a County Health Department or the State Board of Health.

***Personnel Manager, Technician or Officer** — a college degree with major work in the field of social sciences or public or business administration. **Duties:** handles all phases of the personnel work in the State Board of Health and County Health Departments.

***Administrative Assistant** — a college degree in public or business administration. **Duties:** assists in the administering of a large County Health Department or one of the bureaus, divisions or programs of the State Board of Health.

***Attorney** — a law degree and admission to the Florida Bar Association. **Duties:** responsible for advising the State Health Officer and the staff of the State Board of Health on legal matters, providing the Board with legal services, and representing the agency in court trials.

***Social Scientist** — a doctorate or a master's degree in one combination of the social sciences and two to four years experience in public health, vocational rehabilitation counseling, clinical social work or other closely related fields. A master's degree in public health may be in lieu of experience. **Duties:** concerned with the origin and role of social groups and behavior. Responsible for correlating social action principles and practices into a specific public health program and the planning, developing, installing and directing of a social science program in a County Health Department.

***Medical Social Worker** — a master's degree from a school of social work based upon completion of two years of graduate study, including courses in casework, psychiatric and medical information and supervised field work; and one year of experience in a clinical setting with specialization in social casework. **Duties:** applying clinical social work in a public health clinic.

***Pharmacist** — graduation from a school of pharmacy and registration by the Florida Board of Pharmacy. **Duties:** purchase and distribute drugs for the State Board of Health and County Health Departments; fill prescriptions for indigent patients, as indicated by county health officers and private physicians; give consultative services to County Health Departments.

***Health Mobilization Coordinator** — a college degree and one or more year's experience in public health. **Duties:** responsible for the coordination of health services which are concerned with the training and survival of Florida citizens in times of natural or man-made disasters.

POSITIONS NOT REQUIRING A COLLEGE EDUCATION

There are many positions in the public health field which do not require a college degree but which are staffed by people necessary for the smooth operation of the State Board of Health and County Health Departments. Some of the 14 following classifications require only a high school diploma while others, such as a position for x-ray technician, have a prerequisite of technical training.

The nutritionist promotes better health through proper diet and wise choice of foods.



CLERICAL

Important in every County Health Department and office of the State Board of Health are the clerical personnel who type letters, file records and correspondence, and do the many jobs which make an office function smoothly. They are also valuable for their public relations responsibilities — meeting, greeting and directing the public to the right individuals. A high school education is necessary; further education in commercial or secretarial science may be helpful for advancement.

***Secretary** — responsible for secretarial work and taking and transcribing oral dictation; must be able to take 80 words a minute in dictation and type 35 words a minute.

***Clerk-Typist** — must be able to do fairly complex clerical work and must be able to type 35 words a minute.

***Clerk** — must be able to do general clerical work, such as filing, etc.; advanced positions do more supervisory and technically varied work.

DATA PROCESSING

A position in this field requires at least a high school education; additional education and/or experience may help for promotion or advanced classification.

***Key Punch Operator** — performs rapid and accurate work in punching coded or uncoded data into electronic data processing machinery cards.

***Attorney** — a law degree and admission to the Florida Bar Association. **Duties:** responsible for advising the State Health Officer and the staff of the State Board of Health on legal matters, providing the Board with legal services, and representing the agency in court trials.

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OTHER PERSONNEL

***X-ray Technician** — requires a high school education plus a course in x-ray training; operates and maintains x-ray equipment, plus the operation of mobile or portable x-ray unit.

***Laboratory Technician** — Although a high school or vocational school education is necessary, college work in zoology, chemistry, bacteriology or related fields may be helpful for advancement; performs a wide variety of laboratory examinations and tests.

***Rabies Control Worker** — investigates and picks up unlicensed and diseased animals, especially those suffering from rabies.

***Sprayman** — works with mosquito control and eradication program in the control of insects; inspects vacant lots and premises for mosquito breeding and sprays water-holding containers and shrubs to kill insects.

***Sanitary Aide** — picks up water samples, checks garbage dumps and carries out environmental health work which is not of a professional nature.

***Home Health Aide** — receives two weeks training prior to being assigned to a case; renders personal care to the sick person in the home on the orders of a physician and under the supervision of a registered nurse.

***Clinic Aide** — carries on clerical and housekeeping duties in the County Health Department clinics; is involved in the preparation of treatment rooms for use by patients; cleans rooms and equipment after clinics; and performs routine filing.

***Foreman and Maintenance Man** — responsible for the supervision and semi-skilled and skilled work in several trades which are necessary for the maintenance and repair of buildings and equipment.

***Laborer** — a minimum education of six grades is required and employees must be able to read and write; includes such workers as domestics and janitorial workers, custodial and security guards.

Scholarships...

The high school student who is interested in a health career may find various kinds of scholarships available through the State Department of Education or through the student financial aid office of the university or college of his choice. These scholarships are available in limited numbers and are usually awarded on the basis of academic excellence, good character, leadership and financial need. There are also loans or scholarships available through various federal and state programs and from professional organizations, such as medical, nursing and engineering societies, and fraternal and civic groups.

Many civic and professional organizations both on a state and national level, award scholarships for undergraduate and graduate work in nursing education. The Florida Nursing Association sponsors a scholarship program — with money appropriated by each session of the Florida Legislature — which helps both licensed practical nurses and two, three and four year nursing students.

High school seniors take competitive examinations each October for these scholarships which are awarded the following year. A Nurses Training Act, sponsored by the Federal Government, also provides scholarships for senior undergraduate and graduate nursing students who show outstanding leadership ability.

The State Board of Health offers graduate scholarships for outstanding staff members which may lead to a master's degree in public health, sanitary engineering, bacteriology or other special areas. These are mostly for one year, but occasionally a scholarship may be for a two or three year period. Exceptions have been made in the past for scholarships to certain long-time employees which have permitted them to complete undergraduate degrees.

The State Board of Health also administers one osteopathic and five dental scholarships each year. For each \$2000 dental students receive, they must work one year in an area of need designated by the State Board of Health or in a public health clinic. At the present time, 21 dentists have completed their obligated service by serving the people in rural areas of Florida. The osteopathic scholarship is

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for \$1000 a year and the student carries out one year of obligated duty for each \$1000 received.

There are usually a limited number of summer positions open at the State Board of Health for college students who are interested in health careers. The agency also has a work-study cooperative program with one university whereby students can work on a part-time basis during the summer months.

Public Health Opportunities in Florida...

In the opinion of many public health authorities across the United States, Florida has an outstanding health department system — both on the state and county levels. In 1966 the **Wall Street Journal** noted that the Florida State Board of Health was one of the best five of its kind in the United States. This standing was not achieved by happenstance but through the efforts of thousands of Florida public health workers during the past 78 years.

Continuous expansion of the state's population and economy assures Floridians that the health programs will give further opportunity for advancement. And, whereas, the state's salaries are traditionally lower than those in private industry, there have been improvements in recent times in many classifications which make them more nearly comparable with private employment.

The other advantages of state employment in public health include: a Merit System which gives job protection, a retirement system, life insurance and hospitalization plans and a credit union. A number of classifications, such as sanitarian, secretary and information specialist require some form of competitive Merit System examination; other classifications, such as maids, home health aides and laborers, do not.

There are some 3800 workers in the State Board of Health and the 67 County Health Departments who take pleasure in knowing that they are helping their fellowman through careers in public health. When you choose a career you are making an important decision. You will find choosing a health career a most rewarding experience.